Judge-dependence in quality nouns

A semantic analysis of the Mandarin Chinese "you NP" structure

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By combining the idea of property concepts and the kernel-based theory of subjectivity, this paper proposes an analysis of the otherwise mysterious behavior of the Mandarin "you" predicates, where subjectivity/evidentiality and possessive/attributive readings come and go in an intricate way. The paper presents a phenomenon of Mandarin called possessive Property Concept predicates, involving a possessive morpheme *you* "have" and a bare NP. Studying the subjectivity puzzle in Chinese advances our understanding of information source and information force in the following way. The Chinese fact, as a separate element, is part of the bigger picture about subjectivity. To explain how the subjectivity predicate as a natural class connects with evidentiality, this paper provides an approach to probe subjectivity through examining the information source change, which is derived from removing or adding evidential morpheme(s).

Keywords: quality noun, subjectivity, evidentials, information source versus information force, possessive constructions, Chinese 'you' structure, relative truth, formal semantics

1. Introduction

We have good grasp about the degree semantics of adjectives, whereas studies about the counterparts of nouns are relatively few, and what's even less studied is judge-dependence in nouns. This study focuses on how natural language conceptualizes relative truth through noun and noun phrases.

Non-verbal property concept sentences either can have the canonical form of non-verbal predication such as seen in (1a), or can take the form of possessive sentences (1b). I observe that quality nouns, which is recently studied in Francez and Koontz-Garboden (2017) (henceforth FKG), give rise to subjectivity on top of

gradability. I propose that the combination of gradability (order-theory), subjectivity (judge-dependent) and evidentiality (directness) is necessary and sufficient for quality assessments. This effect is especially distinct and manifest in the Chinese data involving nouns.

(1) a. Anna is wise.
     b. Anna has wisdom.

In particular, the consistent contrast between a noun like *beauty* and a noun such as *weight* deserves a careful analysis. To quibble (i.e. objective disagreement) in (3) is weird, but not (2). Quality noun like *beauty* can be embedded under FIND (4) and it appears to be sensitive to acquaintance inference (AI) (6a). In contrast, a noun such as *weight* is incompatible with FIND (5), and does not seem to require an acquaintance presupposition (6b). Subjective disagreement, FIND and AI are the linguistic tests established in the subjectivity literature (Lasersohn 2017, Kennedy and Willer 2016, Kennedy 2013, Ninan 2014, Anand and Korotkova 2018).

(2) A: This box is twice the **weight** of that one.
     B: No it's not! It's three times the weight of that one!

(3) A: Agnes has twice Bertha's **beauty**.
     ??/#B: No she doesn't! She has three times her beauty!

(4) a. I find Agnes twice as beautiful as Bertha.
     b. I find Agnes has twice Bertha's beauty.   (*dispreferred*)

(5) a. #I find Agnes twice as tall as Bertha.
     b. *I find Agnes has twice Bertha's height.

(6) a. Agnes has twice Bertha's **beauty**, # although I've never seen Agnes.
     b. This box is twice the **weight** of that one, although I've never lifted the box.

Such contrast is not confined to English. In fact, although the form of property concept sentence in (1b) is rather limited in English, there are languages in which it is the primary form in which property concept sentences are attested. Such languages become helpful if we want to have a close scrutiny of the contribution of noun. (7)–(9) present such a phenomenon of Mandarin called possessive Property Concept (henceforth PC) predicates (FKG 2017, c.f.(1)), involving a possessive morpheme *you* 'have' and a bare NP.

(7) *Anna you jingyan   ma*?
     Anna have experience Q
     a. Attributive: 'Is Anna experienced?'
     b. Possessive: 'Does Anna have (the particular) experience?'

(8) *Anna you zhihui ma?*
 Anna have wisdom Q
 'Is Anna wise?'

(9) *Anna you dami/mao ma?*
 Anna have rice/cat   Q
 'Does Anna have rice/cats?'

(10) a. *Anna BI   Lisi you xiangfa.*
 Anna than Lisi have thought
 Anna is more creative than Lisi.
   b. # *Anna bi Lisi you dami/mao.*
 Anna than Lisi have rice/cat

(11) a. *Anna hen you xiangfa.*
 Anna very have thought
 Anna is very creative.
   b. # *Anna hen you dami/cat.*
 Anna very have rice/cat

(10), (11) show that with a noun such as 'thought', the PC construction is gradable, but not with nouns like 'rice' or 'cat'. This paper argues that partial order of the non-quality noun (mass noun or count noun) does not lend itself to gradability (10b), (11b)–there is no sense in which certain things are ranked higher than others on the part-whole relation, because the ordering is partial, and it's not the case that any two given parts of *rice* are ordered relative one another. As a consequence, non-quality nouns are not gradable and are thus not subjective. Quality nouns like *beauty/courage* pattern with mass nouns in that they're both mereologically structured, but differ from mass nouns in that quality nouns are ordered by the total preorder, whereas mass nouns such as *rice/wine* are only ordered by the mereological partial order. In terms of privileged judgement, there is no sense in which a part of *whiskey*'s 'position' in the part-whole structure is something that a speaker has any way of perceiving and being impressed by, since nothing about the part of whiskey discloses anything about such a position. In contrast, speakers are able to perceive a person's degree of *courage* from his/her behavior.

2.   Previous studies on judge-dependence

2.1   Diagnostics of taste predicates

Predicates of Personal Taste (PPTs) describe subjective judgement in the eye of beholder, for instance, *tasty, delicious, fun*, etc. Other predicates (OPs) such as *nuclear, local, deciduous, spotted, wooden*, etc. describe objective properties. They deserve careful scrutiny for two reasons. One is that opinion-sensitivity of natural language complicates the notion of truth both compositionally and conceptually. On the other hand, taste predicates straddle the divide between semantics and pragmatics. Theoretical literature has an inclination to make a categorical distinction between the two fundamentally different classes (PPTs and OPs). By contrast, much computational literature on sentiment analysis (Baccianella et al. 2010) tend to argue that subjectivity-objectivity is scalar.

It's worth highlighting that PPT is a sub-class of subjective expressions (Korotkova 2016). Korotkova summarizes that linguistic expressions that describe experiences such as feelings, mental states, and bodily sensations are called *subjective*. Individuals have privilege and exclusive access to certain kinds of information about themselves, through senses and introspection. The class of subjective expressions includes (12) (Korotkova 2016:17).

(12) 1.   first-person attitude reports such as *I hope*
      2.   first-person statements with psych verbs such as *I am excited*
      3.   epistemic modals such as *might*
      4.   PPT such as *delicious*

Most of the formal semantic literature about PPTs concentrates on *fun* and *tasty*. Unfortunately, there is no settled procedure of identifying PPTs (Lasersohn 2005, Cappelen and Hawthorne 2009, Egan 2010, Moltmann 2010, Pearson 2013, Bylinina 2017). There is a set of working diagnostics as listed in (13) that identify a distinguished linguistic profile syntactically, semantically, and pragmatically.

(13) 1.   They trigger faultless disagreement (Lasersohn 2005, 2017)
      2.   They can be embedded under subjective attitude verbs (*find*-test) (Stephenson 2002, Stephenson 2007, Kennedy 2013, Kennedy and Willer 2016)
      3.   The Acquaintance Inference (AI)–a firsthand experience requirement imposed by several subjective assertions (Ninan 2014, Anand and Korotkova 2018 (henceforth AK)).
      4.   They can take overt 'judge'-PPs (AK 2018)

A rough initial characterization in Lasersohn's (2017) recent work says that a sentence expresses a matter of opinion if it is declarative in syntactic form, but

gives rise to faultless disagreement when contradicted. Disagreements over tastiness are seen as matters of opinion. Such disagreement is faultless (Kolbel 2003; Moltmann 2012; Stojanovic 2007; Stephenson 2007; Kennedy 2013; Saebo 2009). Each party can be right and there are no contradictions. No conversational crisis ensues (Farkas and Bruce 2010). Disagreement with OPs is different. I show this contrast in (14) and (15).

(14) **Floyd:** Roller coasters are **fun**.

   Clyde: √ No, they are boring.

(15) **Floyd:** This semantics workshop is biannual.

   Clyde: No it isn't.

The contrast of (14) and (15) shows that disagreement over tasters is allowed in some cases, with the disagreement being faultless. In particular, in (14), Floyd and Clyde can agree to disagree on whether roller coasters are fun/boring, since they are "tasters" themselves. By contrast, in (15), whether or not the workshop is biannual is a matter of fact, thus there has to be one person's statement to be false. Namely, the workshop cannot be biannual yet not biannual at the same time.

   Faultlessness goes away with overt tasters. Such dialogues can be construed as disagreements about one's private experience and are generally infelicitous with subjective expressions (Korotkova 2016).

(16) Taste predicates with overt tasters
   Floyd: Durian cakes are delicious for me.

   Clyde: # No, they are gross.

Secondly, PPTs but not OPs can be embedded under subjective attitude verbs, namely the *find*-test (Stephenson 2002, Stephenson 2007, Saebo 2009, Kennedy and Willer 2016). In other words, *find* needs first hand experience, at least a ground (17). But plain doxastic attitudes such as *think* or *say* are not sensitive to the distinction (18).

(17) Floyd finds it {tasty, delicious; #deciduous, #biannual}.

(18) Clyde thinks that it is √ {tasty, delicious; deciduous, biannual}.

The third diagnostic is concerned with Acquaintance Inference (AI) (Pearson 2013, Ninan 2014). PPTs require firsthand experience with the stimulus (19) (Kennedy and Willer 2016, Bylinina 2017, Anand and Korotkova 2018). By contrast, OPs do not have such requirement (20). The AI requirement can be lifted (AK 2018). The obviation effect caused by adding the obviators *must' probably* is illustrated in (21).

(19) a. The puerh was **delicious**, #but I've never tasted it.
      b. The durian cakes were **tasty**, #but I've never tried it.
      c. This piano **sounds** annoying, #but I've never heard it.

(20) a. This vase is fragile, √but I've never broken it.
      b. This tree is deciduous, √but I've never seen it in the fall.

(21) The puerh $\left\{ \frac{must}{might} \text{ have been; } \frac{\frac{probably}{possibly}}{maybe} \text{ was; will/is going to be obviously/certainly/apparently was} \right\}$

(19)–(21) also indicates an instance of the general sensitivity of natural language to direct evidence. Extensive discussions of 'evidence' are given in Chapter 2, together with cross language data.

The fourth test concerns the experiencer PPs. Taste predicates take overt taster PPs (*to/for*) (22), whereas other predicates (OPs) don't (23). Notice that this contrast is not the same as the comparison class *for* (24).

(22) a. This durian cake is delicious to Floyd.
      b. Nanjing is beautiful to Clyde.

(23) a. #This semantics workshop is biannual to Floyd.
      b. #This tree is deciduous to Clyde.

(24) a. expensive for a tent
      b. tall for a building

Later discussions will show that such prepositions as *to/for* do not seem to be an universal introducer of the experiencer argument (i.e. the *judge*). PPTs are presumably *universally* opinionated but languages may differ with respect to the strategy they employ to introduce the opinion holder argument.

2.2 Non-indexical relativism and other alternatives

Apart from distinguishing PPTs from OPs, another crucial part of the PPTs literature is concerned with the nature of the taster–in Lasersohn's term *judge*. There are three main contenders: (i) contextualism–the taster is from the context of utterance (Bhatt and Pancheva 1998, Anand 2006, Moltmann 2010, Schaffer 2011, Pearson 2013, Zakkou 2015), (ii) relativism–the taster is from the context of assessment/index (Lasersohn 2017, Stephenson 2007, MacFarlane 2014), and (iii) expressivism/non-factualism–the taster is expressing an attitude rather a proposition whose truth can be evaluated.

View (iii) is influential for epistemic (Yalcin 2007, Yalcin 2011), less popular for PPTs. View (i) contextualism is 'indexical' because there is an 'I' which will

be referred to later, and contextualism is a particular way of handling such kind of unarticulated constituents as indexicals. (25) illustrates the big problem of the indexical contextualism view on PPTs regarding 'disagreement with indexicals', which is what makes PPTs special and hard to analyze.

(25)   Disagreement with indexicals
      Floyd: I'm in Pittsburgh.   ('I' = Floyd)
      Clyde: # No, I'm not.   ('I' = Clyde)

An intuitive way of construing subjectivity is what indexical contextualism attempts to argue–the taster is the speaker (*I*). The defining property of indexicals is utterance-sensitivity (26) (Schlenker 2011, Schlenker 2020).

(26)   **Floyd:** I am a vegetarian.   ('I' = Floyd)
       Clyde: I am a vegetarian.   ('I' = Clyde)

However, in one way or another, nearly all analyses of indexicality relativize the denotations of indexical expressions to features of pragmatic contexts–a time, location, speaker, addressee, etc. Although this analysis captures well the "faultlessness" of faultless disagreement cases, it doesn't capture the "disagreement".

(26) shows that Clyde and Floyd can both be true (as long as they are being sincere), since they are talking about themselves. And it's not invalid that both Floyd and Clyde are 'vegetarian'. Thus, the 'faultlessness' part gets explained. Nevertheless, under such a case, there is nothing that Floyd and Clyde can agree to disagree upon, as they are not indexing the same individual in the first place. Since it's never invalid to map two different individuals to two separate propositions (correspondingly), there will never be 'disagreement' between Floyd's utterance and Clyde's utterance.

On the other hand, view (ii) relativism Lasersohn (2005) argues that the taster is not from the context of utterance. The standard of taste is anchored in the judge parameter. This makes PPTs differ from OPs with reference to lexical semantics, given that the truth value depends on the 'judge parameter'. Moreover, Lasersohn maintains that faultless disagreement is possible for the same index, which is a contradiction for the same index argument for contextualists. According to Lasersohn (2005) and Lasersohn (2017), PPTs express the same content, which is a function from indices to truth values, as opposed to character, namely a function from contexts to contents. Truth depends on the circumstances of evaluation and varies with individuals. Kaplan (1977) laid out some background about indexicals (27)–(29), built on which Lasersohn and later PPTs studies flesh out their argument.

(27) $\phi^{c,i}$
       'ϕ is sensitive to context and index'

(28)   Index: circumstances of evaluation
       $i = \langle w,t,...\rangle$

(29)   Context: utterance situation
       $c = \langle author, hearer, location,..., world\rangle$

In line with Lasersohn (2005) and Anand and Nevins (2004), Anand (2006) argues that indices are minimally triples, as illustrated in (30):

(30)   Judge-enriched index (centered world)
       $i = \langle w,t,j,...\rangle$

The consequence of the above assumption and analysis is that now the PPT-OP distinction is (lexical) semantic (31), (32).

(31)   deciduous $^{c,}\langle\,^{w,t}\,\rangle = \lambda x.$ x is deciduous in w at t   (*OPs*)

(32)   fun $^{c,}\langle\,^{w,t,j}\,\rangle = \lambda x.$ x is fun for **j** in w at t   (*PPTs*)

The judge relativism framework can account for faultless disagreement, given that truth is relative to a judge (32). With different judges (the speaker and the addressee), truth may vary. Therefore no contradictions occur, since both can be true at the same time. Stephenson (2007) modifies and extends Lasersohn (2005) to unify PPTs and epistemics. The mechanics and the key components of Stephenson (2007) include the following: the judge is a parameter of evaluation, as per Lasersohn (2005); PPTs are dyadic–the taster is an argument Bylinina (2017); the taster can be a special pronoun PRO _(*j*) or a null referential pronoun; judge-dependence of PPTs occurs only with PRO _(*j*). According to Stephenson (2007), a denotation of *tasty* would be (33).

(33)   tasty $^{c,}\langle w,t,j\rangle$
       $=$ tastes good $^{c,}\langle w,t,j\rangle$
       $= \lambda x\_(e). \lambda y\_(e).$ *y* tastes good to *x* in *w* at *t*

One crucial consequence of (33) is the distinction of bare PPTs and PPTs with overt tasters. Notice that bare PPTs allow both autocentric perspective, in which the taster (*typically the speaker*) is the judge (34), and non-autocentric perspective (35).

(34)   a.   PRO $_j$ $^{c,}\langle w,t,j\rangle = j$
       b.   This puerh is tasty PRO $_j$ $^{c,}\langle w,t,j\rangle$
       $=$ tasty c,$\langle w,t,j\rangle$ (PRO $_j$)$^{c,}\langle w,t,j\rangle$) (this puerh $^{c,}\langle w,t,j\rangle$)
       $=$ 1 iff this puerh tastes good to *j* in *w* at *t*

(35)   Rotting flesh is delicious (to a vulture).   (adapted from Egan et al. 2005)

When a speaker utters (35) using bare PPTs such as *delicious*, it concerns a situation in which the speaker does not eat the rotting flesh and she is not the judge. Rather, the speaker takes a non-autocentric view and believes that to a third party, namely the actual taster "a vulture", rotting flesh tastes great.

Essentially, Lasersohn (2005) necessarily associates judges with evaluation index. The empirical observations in Anand and Korotkova (2017) as well as those in my proposal can be derived under this approach without additional machinery. The specific strategy I developed is to claim that view (ii) (*non-indexical*) relativism, relativized notion of truth is needed in order to capture the many similarities which sentences expressing matters of opinion share with sentences expressing matters of fact; that it is sufficient to this purpose; and that the unrelativized notion of truth must not be applied to such sentences, in order to capture the differences between the two types of sentence, especially with regard to faultless disagreement. The theory to be presented here thus contrasts both with theories which claim that such sentences are so radically different from statements of fact that no notion of truth and falsity can apply to them, and with theories which deny the difference altogether, claiming instead that even sentences like *This licorice is tasty* and *The roller coaster is fun* describe matters of objective fact, the same for everyone.

2.3   Key assumptions

The primary assumptions I adopted from Lasersohn (2017) are:

1.   denotations will be assigned relative not just to a possible world index, but to a world index and a "perspective" index, where each perspective index itself is identified with an ordered triple of an individual, a time, and a world;
2.   contents accordingly will be identified not with functions mapping worlds onto denotations, but with functions mapping world-perspective pairs (or equivalently, world-individual-time-world quadruples) onto denotations;
3.   semantic *content* can vary with pragmatic context, whereas *character* does not vary Kaplan (1977). The level of content, not character, is the natural locus for identifying when two claims contradict each other.

So far I have covered the distinguished linguistic profile of taste predicates, considering both the grammatical distribution and the conversational dynamics. The sources of their specialty include semantics, pragmatics, as well as the epistemology of taste. I have also laid out a theoretical landscape, in which contextualism and relativism debate in a nutshell. My proposal is not going to offer a theory nor

advocate for a certain camp. I would like to provide a set of delimiting characteristics such that certain theories are going to have problems and others are not. And hopefully that could help us understand the opinionated phenomenon better. The point of the formulas here is not confined to making things more precise, I also plan to ask conceptual questions based on them. The overall goal of this chapter is to provide a focused examination of the PPT-OP distinction, with an attempt to justify that by adding and subtracting the evidential morpheme, there is information source change.

The theoretical landscape of the following chapters is laid out in (36). I adopt the Possessive/Property Concept Francez and Koontz-Garboden (2015, 2017) to denote '*you* NP' and the noun that occurs in the subjective '*you* NP'. The directness framework von Fintel and Gillies (2008, 2011) gave me inspirations to denote *ganjue-dao* 'find' and the combination of *ganjue-dao* and '*you* NP' in a similar manner as von Fintel and Gillies (2008, 2011), Anand and Korotkova (2017) and Anand and Korotkova (2018) did for the knowledge/perception based predicates.

(36) 1. Possessive Property Concept Francez and Koontz-Garboden (2015), Francez and Koontz-Garboden (2017)
      2. Kernel and a direct proposal von Fintel and Gillies (2008); von Fintel and Gillies (2011), Anand and Korotkova (2017), Anand and Korotkova (2018)

In my proposal, extension of (i) is that directness is stored in judge's kernel on the *portion* of the post-*you* noun, which is attested to be quality noun and is of type $\langle p,t \rangle$. The post-*you* noun is the lexical item that the judge parameter ties to. Extension of (ii) is that an overt experiencer argument (i.e. the 'judge') is computationally introduced by the evidential morpheme (evi) *dao*. Essentially, the association of quality noun and subjectivity is attested.

3.   A natural class expressing relative truth

3.1   Identifying the ssubjective '*you* NP'

(37)–(39) present a phenomenon of Mandarin called possessive Property Concept (i.e., PC) predicates (FKG 2017), involving a possessive morpheme *you* 'have' and a bare NP. As indicated by various nouns in (37)–(39), I propose that it's the post-*you* noun predicate that gives rise to the subjectivity on top of the gradability.

(37) *Zhangsan you xiangfa/jingyan* .
      Zhangsan have thought
      a. **Attributive: 'Zhangsan is creative/skillful.'**
      b. Possessive: 'Zhangsan has a particular idea/skill.'

(38) *Zhangsan you zhihui.*
      Zhangsan have wisdom
      'Zhangsan is wise.'

(39) *Zhangsan you shuibei/dami.*
      Zhangsan have water.bottle/rice
      'Zhangsan has a water bottle/rice.'

As illustrated, PC predicates are two-way ambiguous when post-*you* noun is *wenti* 'question' (37). One of the two readings is attributive and (abstract) property characterizing, which is parallel to (38). The other reading concerns possessive, in a sense of possessing a specific countable item, and it mirrors an example like (39). There are some crucial features to highlight about the '*you* NP' in (37a) and (38): (i) insertion between *you* and the NP is illegal and the subjective '*you* NP' is a consolidate construction; (ii) it's a stative, one-place predicate; (iii) it appears to be an individual level predicate. A rough initial characterization is that '*you* NP' with a flavor of PPT can be semantically treated as a subjective AdjP but its syntactic status as a VP remains stagnate.

It's worth mentioning briefly that apart from gradable adjectives and gradable verbs, verbal phrases formed by the possessive morpheme *you* and a quality NP are gradable (Li 2018). (166) is a non-exhaustive list of gradable 'you-NP' that shows subjectivity features, where 'overtly modified' means '*you* NP' is overtly modified by *hen* 'very' or other degree morphemes, 'covert POS environment' means it's under negation or in (polar) question form, and 'simple declarative' refers to bare '*you* NP'.

There is a correlation between the gradability of *you*+NP expressions and their subjective meanings (Li 2018). The NP inside the subjective '*you* NP' denotes abstract substances associated with scales that are not objective physical measures (Li 2018). The distribution feature is given in (40).

(40) Distribution features of *you*+NP (Li 2018) (A.O.)

post-*you* N	*you*+NP
non-abstract-N, 'water' (non-gradable)	possessive, non-gradable
abstract-N, 'wisdom' (gradable)	**subjective**, gradable

Formally, Li (2018) gives two semantics for *you* in (41). P is variable over (abstract) substances, π is a possessive relation. *D* is a variable over sets of portions; it provides a domain restriction for the existential quantifier such that the value of z is restricted to portions that count as 'big enough' in the context. Yet *D* is missing in Li's denotation of *you* in (41).

(41) a. *you*_non-gradable = $\lambda P_{<e,t>} \lambda x. \exists z P(z) \wedge \pi(x, z)$
      b. *you*_gradable = $\lambda P_{<d,t>} \lambda d \lambda x. P(d) \wedge \pi(x, d)$

(41b) fails to count for the observation that gradability is associated with subjectivity, and a crucial parameter that has been established in the subjectivity literature–*judge* (*j*)–is still missing in (41b). My intuition differs from Li's in that on top of gradability, what contributes to the subjectivity *flavor* of '*you* NP' is not *you* but the noun that occurs after *you*. A more fine-grained analysis of the post-*you* noun is needed. I attempt to develop formal mechanisms that tie subjectivity to a particular lexical item, govern the use of subjectivity, and thus better capture how natural language conceptualizes the source/force of information for the proposition conveyed by a sentence.

A careful scrutiny of the PPT diagnostics, which I'll now turn to, indicates that not all '*you* abstract-N' expressions is subjective, and the notion of 'abstract noun' isn't easy to falsify. *xiangfa* in *you xiangfa* 'have (a particular) thought' can be abstract, which is in contrast with concrete physical objects like *shouji* 'cell phone'. Yet *you xiangfa* 'have (a particular) thought' is not subjective. It's only the 'creative' interpretation of *you xiangfa* that shows subjectivity features. In the following discussions, I'll show how taste predicates get realized in Mandarin–what types of noun give rise to subjectivity and how *j* gets encoded semantically.

Faultless (or subjective) disagreement is essentially about relative truth, namely statement whose truth is a matter of opinion (Lasersohn 2005). It is in distinct contrast with statement whose truth is a matter of fact. Stephenson (2007) explains that intuitively, the interlocutors disagree with one another. There is a sense in which both speakers have said something true, so long as each was sincere in her expression of her opinion. For this reason, the disagreement does not seem to be one that can be resolved. Faultless disagreement data in (42) indicate that the judge parameter also exists somewhere in the *you* structure.

(42) a. A: *Zhangsan bi Lisi you yuanze.*
          A: Zhangsan bi Lisi have discipline
          A: 'Zhangsan is more disciplined than Lisi.'
          B: *Bu, Zhangsan buru Lisi you yuanze.*
          B: No, Zhangsan NEG Lisi have discipline
          B: 'No, Zhangsan is not as disciplined as Lisi.'
          A: # *Oh baoqian, wo gao cuo le.*
          A: #Oh sorry, I get wrong PRT
          A: 'Oh sorry. I got it wrong.'

b. A: *Zhangsan bi Lisi gao.*
   A: Zhangsan bi Lisi tall.
   A: 'Zhangsan is taller than Lisi'.
   B: *Bu, Zhangsan buru Lisi gao.*
   B: No, Zhangsan NEG Lisi tall
   B: 'No, Zhangsan is not taller than Lisi.'
   A: *Oh baoqian, wo gao cuo le.*
   A: Oh sorry, I get wrong PRT
   A: 'Oh sorry, I got it wrong.'

Judges may disagree about personality evaluation, they may not disagree about the height of an individual like *Zhangsan*, which is an objectively verifiable fact of the world. There is no conversation crisis to be resolved in (42a). Apologies are associated with conversation crisis and they are added to the common ground to resolve the conversation crisis, according to Farkas and Bruce (2010). The interlocutor A's apology is thus infelicitous, as opposed to (42b).

Attitude verb *find* contrasts with its close relative *consider*, which licenses both kinds of subjectivity in its complement (Fleisher 2013). Kennedy and Willer (2016) has a detailed discussion about attitude verbs. subjective attitude verbs (SAVs), such as English *find*, differ from ordinary doxastic attitude verbs (such as English *believe*) in that they require their complement to be subjective in a particular way (43) and (44). PPTs can embed under attitude verb *find*. Kennedy (2013) points out that only subjective predicates like PPTs can embed under *find* with positive forms, while non-subjective adjectives, such as *big, large or small*, cannot (45).

(43) a. I find the soup tasty.
    b. #I find Jon five feet tall.

(44) a. I consider the soup tasty.
    b. I consider Jon five feet tall.

(45) a. Anna finds her bowl of pasta tasty/delicious.   (Positive sentences)
    b. ?Anna finds her bowl of pasta big/large/small.

Such distinction is available in Chinese, which provides a second piece of evidence for the claim that '*you*+NP' is a subjective predicate. The selectional sensitivity of attitude verbs *ganjue-dao* 'find' and *renwei* 'consider' is examined in Mandarin below. A 'find'-like attitude verb *ganjue-dao* can take '*you*+NP' complement but not a *gao* 'tall' predicate (46a,b). A 'consider'-like attitude verb *renwei* or a plain doxastic attitude verb *ganjue* 'feel' is compatible with both (47a,b).

(46) a. *Wo **ganjue-dao** Zhangsan you lixiang.*
          1SG feel-evi   Zhangsan have pursuit
          I find Zhangsan ambitious.
      b. # *Wo **ganjue-dao** Zhangsan you shouji.*
          1SG feel-evi   Zhangsan have phone
          Lit: I find Zhangsan have-phone.

(47) a. *Wo **renwei/ganjue** Zhangsan you lixiang.*
          1SG think/feel   Zhangsan have pursuit
          I think/feel that Zhangsan is ambitious.
      b. *Wo **renwei/ganjue** Zhangsan you shouji.*
          1SG think/feel   Zhangsan have phone
          I think/feel that Zhangsan has a phone.

Notice that *ganjue-dao* is not totally equivalent to English *find*. Syntactically, *find* takes NP, adjective (phrase) and small clause. But *ganjue-dao* appears to take a wider range of categories (52), which isn't available when it comes to English 'find' (53). Crucially, complementizer is *controversially* covert in Chinese (Huang 2015). Hypothetically (52) has a syntactically active complementizer. That being said, (52) might be morphologically disguised as 'feel-dao' but whether or not –*dao* in (52) concerns evidentials is open to discussion.

I suggest that it is the evidentiality of -*dao* that makes it fail to select non-judgmental or factual predicates like *Zhangsan you shouji*. The compatibility of *ganjue-dao* with *you-lixiang* can then only be used to prove that *you-lixiang* is judgemental, and whether it is equivalent to subjective might be debatable. Unlike English "find" which is a subjective attitude verb, *ganjue-dao* seems to have become evidential attitude verb, which may be the main reason leading to all the differences between the two. This has open up a new possibility for future research. Here is another independent piece of evidence showing that the evidentials do come from *dao*.

(48) *Zhe-tiao-yaodai chang (yi-mi).*
      this-cl-belt   long   1-meter
      i.   This belt is (one meter) long.   ⟨*subjective*⟩
      ii. This belt is (one meter) long*er* (than the contextually salient belt)
                                                                       ⟨*objective*⟩

Zhang (2019) suggests that bare adjectives are inherently ambiguous between a vague positive meaning in which the standard is opinionated, and a comparative meaning for which the standard is objectively supplied by the context. This is illustrated in (48a,b). And the presence of *hen* serves the role of disambiguation

by suppressing the objective-like comparative reading. This is illustrated by the sentences in examples (49).

(49) *Zhe-tiao-yaodai hen chang.*
this-cl-belt   hen long
This belt is long.   ⟨*subjective*⟩

Now consider the interaction of bare adjectives such as *chang* 'long' and the three expressions *ganjue* (50a), *ganjue-dao* (50b), and *renwei* (50c).

(50)   a.   *Wo ganjue zhe-tiao-yaodai chang.*
          I   feel   this-cl-belt   long
          i.   I feel that this belt is long.   ⟨*subjective*⟩
          ii.   I feel that this belt is longer (than the one salient in the context).
                                               ⟨*objective*⟩
     b.   *Wo ganjue-dao zhe-tiao-yaodai chang.*
          I   feel   this-cl-belt   long
          i.   I find the belt is long.   ⟨*subjective*⟩
     c.   *Wo renwei zhe-tiao-yaodai chang.*
          I   feel   this-cl-belt   long
          ii.   I think the belt is longer (than the one salient in the context).
                                               ⟨*objective*⟩

With bare adjectives, *ganjue* in (50a) and *renwei* in (50c) both have the factual comparative reading available. By contrast, such reading does not surface in (50b) with *ganjue-dao*. Suppose a context in which the belt is three meters long, and the other belt is two meters long, the fact that only (50a,c) surface yet (50b) sounds odd indicates that *dao* is incompatible with objectively specified standard.

(51)   a.   *Wo ganjue zhe-tiao-yaodai hen chang.*
          I   feel   this-cl-belt   hen long
          i.   I feel that this belt is long.   ⟨*subjective*⟩
     b.   *Wo ganjue-dao zhe-tiao-yaodai hen chang.*
          I   feel   this-cl-belt   hen long
          i.   I find the belt long.   ⟨*subjective*⟩
     c.   *Wo renwei zhe-tiao-yaodai hen chang.*
          I   feel   this-cl-belt   hen long
          i.   I think this belt is long.   ⟨*subjective*⟩

On the other hand, when *hen* is present and the opinionated reading gets activated, utterances involving *dao* surface, as show in (51b). The independent fact that *hen* denotes knowledge-based subjectivity has been proposed by Fang (2016). (51a,c) also suggest that *hen* is associated with subjectivity.

(52) *Wo ganjue-dao Lisi jintian xiawu   hui chidao.*
1SG feel-dao   Lisi today   afternoon will late
I feel that Lisi will be late this afternoon.

(53) I find *(that) Lisi will be late this afternoon.

Moreover, Aikhenvald (2004) provides extensive discussion about evidentiality, who states that evidentiality is a linguistic category that denotes information source for the proposition expressed by a sentence. For example, in English, there are lexical means, such as *seem* or adverbials.

(54) Threatened by climate change, Florida **reportedly** bans term 'climate change'.
Washington Post

Further, Willet (1988) offers insights on evidentiality from a cross-linguistic perspective, suggesting that many other languages have dedicated grammatical means to talk about information source, for instance verbal morphology, clitics, and particles. Willet (1988) based on a 32-language sample, summarizing that direct evidence include visual, auditory, and other sensory; indirect evidence consists of indirect inference, such as reasoning and results, and indirect hearsay, for instance, secondhand, thirdhand, and folklore. In particular, *inference from results* means that the speaker infers the situation described from the *observable evidence* (i.e. from perception of the results of the causing event or action.), whereas *inference from reasoning* means that the speaker infers the situation described on the basis of intuition, logic, a dream, previous experience, or some other *mental construct*.

To summarize, so far two independent tests are necessarily applicable to justify that the *you* structure shows subjectivity characteristics. The third diagnosis–taking overt 'judge'-PPs–is also attested but Chinese realizes 'for'/'to' distinction in a different way. The *overt* 'judge'-PP is not thematic but is identified as an attitude report in the '*you*+NP' structure (55).

(55) *Zhe kuai shoubiao dui Lisi lai-shuo you jiazhi.*
This CLF watch   to Lisi *lai*-speak have value
'The watch is valuable according to Lisi.'

The opinion holder is introduced by preposition *dui* 'to', followed by *lai…shuo* whose literal meaning is 'come…speak'. *lai* is a functional word in this construction. *lai* can also be a content word–as a motion verb meaning 'come'. '*dui* NP *laishuo*' as a consolidate unit introduces the opinion holder NP (55). The syntactic status of *dui…laishuo* is adverbial and is semantically treated as attitude report, whose equivalent in English is 'according to'. Evidence indicating its adverbial/non-thematic status is stacking (56), (57).

(56) *Zhe kuai shoubiao dui Lisi lai-shuo   dui Mo lai-shuo   dui Afu lai-shuo   you*
This CLF   watch   to   Lisi *lai*-speak to   Mo *lai*-speak to   Afu *lai*-speak have
jiazhi.
value
'The watch is valuable, (according) to Lisi, Mo, and Afu.'

(57) *Zhe kuai shoubiao dui Lee dui Kim dui Jay lai-shuo   you jiazhi.*
This CLF   watch   to   Lee to   Kim to   Jay *lai*-speak have value
'The watch is valuable, (according) to Lee, Kim, and Jay.'

Given that '*dui* NP (*laishuo*)' can be stacked and cannot saturate an overt judge argument, Chinese takes a separate strategy to realize a PPT with overt taster–'*you* NP' embedded under *ganjue-dao*. There will be extensive discussions in the next section.

Another test that is necessarily applicable to Chinese is AI and the obviation effect. Research on (in)directness has shown that obviation is possible with linguistic elements that convey indirectness, including epistemic modals and futurate markers in English. Besides, epistemic adverbs, predicates of clarity, hedges and markers of emphatic certainty are in the list of obviators, as illustrated by AK (2018) in (58, repeating (21)).

(58) The puerh $\left\{ \frac{must}{might} \text{ have been; } \frac{\frac{probably}{possibly}}{maybe} \text{ was; } \frac{will}{is} \text{going to be; obviously/certainly/apparently was} \right\}$

Predicates of personal tastes (PPTs) (59), psych predicates (60), and subjective attitudes (61) show that the AI cannot be cancelled.

(59)   The puerh was **delicious**, #but I've never tasted it.

(60)   The piano **sounded** out of tune, #but I've never heard it.

(61)   I **consider** the dress blue and black, #but I've never seen it.

AI cannot survive under negation, as shown in (62)–(64).

(62)   The puerh **wasn't delicious**, #but I've never tasted it.

(63)   The piano **didn't sound** out of tune, #but I've never heard it.

(64)   I **don't consider** the dress blue and black, #but I've never seen it.

Data suggests that AI is not an implicature. But it can be lifted by obviators, namely the *obviation* effect as illustrated in (65)–(67).

(65)   The puerh **might have been delicious**, though I've never tasted it.

(66)   The piano **might have sounded** out of tune, though I've never heard it.

(67)   I **might have considered** the dress blue and black, though I've never seen it.

As illustrated above, English obviators convey indirectness (cf. recent work on epistemic *must*). Grammatical markers of indirect evidentiality follow this pattern in general. (68) shows how they behave from a cross language perspective (Turkish).

(68)   Turkish (Turkic: Turkey)
    a.   Bare form:
      # *Durian güzel, ama hiç   dene-me-di-m.*
      durian   good, but   ever try-NEG-PST-1SG
      Intended: 'Durian is good, but I've never tried it.'
    b.   Evidential *miş*:
      √*Durian güzel-**miş**, ama hiç   dene-me-di-m.*
      durian   good- IND , but   ever try-NEG-PST-1SG
      'Durian is good, *I hear/infer*, but I've never tried it.'

It turns out that the subjective '*you* NP' structure is sensitive to AI as well. (69) and (70) are subjective '*you* NP' clauses with *overt* judge arguments, which is introduced by the doxastic *ganjue* 'feel' suffixed with an evidential morpheme *dao*. (71) and (72) are *bare* taste predicates in Mandarin.

(69)   *Wo ganjue-**dao** Zhangsan you   wenti,   # dan wo mei yu-guo   ta*
    1SG feel-evi   Zhangsan have question, #but 1SG NEG meet-EXP.PERF 3SG
    re   shenme mafan.
    cause any   trouble
    Lit: I find Zhangsan troublesome, but it never occurred to me that he/she caused any troubles.

(70)   *Wo ganjue **dao** Zhangsan you   zhihui, #dan wo mei jianshi-guo   ta*
    1SG feel   evi Zhangsan have wisdom, #but 1SG NEG impress-EXP.PERF 3SG
    de   caizhi.
    MOD wisdom
    Lit: I find Zhangsan wise, but I was not impressed by his/her wisdom.

(71)   *Zhe pian wenzhang you   shendu, # dan wo mei du-guo.*
    This CLF article   have depth, but   1SG NEG read-EXP.PERF
    Lit: This article is sophisticated, but I haven't read it.

(72)   *Allen de   xin dianying you   weidao, # dan wo mei kan-guo.*
    Allen MOD new film   have taste,   but   1SG NEG watch-EXP.PERF
    Lit: Allen's new film is classy, but I haven't watched it.

The continuation is infelicitous through (69) to (72). This indicates that the subjective '*you* NP' structure, regardless of having an overt judge argument or not, requires acquaintance inference. A continuation asserting the lack of such (*direct*) acquaintance is thus contradicting the taste predicates truth conditionally. That line of investigation leads me to wonder what an obviator would look like in Mandarin. Interestingly, Fang (2016) offers insights on the puzzle. (73) is Fang's example, showing that when modified by *hen*, it is a weaker assertion than the bare form, and it becomes a type of subjectivity that does not require firsthand experience. It is more similar to subjective epistemic modals than PPTs. Inspired by that, I came up with an example in (74), which is interestingly felicitous. Could it show that *hen* can possibly be seen as an obviator? Further scrutiny is needed in order to come to an affirmative conclusion.

(73) *Afu **hen** gao, dan wo mei yu-guo   ta.*
      Afu hen tall, but 1SG NEG meet-EXP.PERF 3SG
      Afu is tall, but I've never met him/her.   (Fang 2016: ex41)

(74) *Nage huodong **hen** you yisi, dan wo mei canjia-guo.*
      That activity   hen have fun, but 1SG NEG participate-EXP.PERF
      That activity is fun, but I've never participated in it.

I argue that the Chinese data might help us with teasing apart directness and subjectivity. According to Matthewson (2007), directness concerns information **source** and depends on the perceptual evaluation of the portion property concept. Subjectivity concerns **force** (quantificational strength = speaker certainty). Epistemic modals (corresponding to *hen* in Chinese (73), (74)) and PPTs (corresponding to the '*you* NP' in Chinese (69)–(70)) are two types of subjectivity–the former concerns force; the latter source. Owing insights to AK (2018) and von Fintel and Gillies (2011) (henceforth vFG), I further propose that the initial clause in (69) and (70) would become infelicitous with epistemic 'must'. When the overt experiencer/judge is the speaker, contradiction occurs because with *ganjue-dao*, the speaker presumably has direct experience but 'must' lifts such directness. These predictions were all borne out (75)–(78).

(75) # ***Wo yiding** ganjue-**dao** Zhangsan you <u>wenti</u>.*
      1SG must   feel-evi   Zhangsan have questions
      Lit: Zhangsan must be troublesome to me.   (***speaker=j; AMB-N***)

(76) # ***Wo yiding** ganjue-**dao** Zhangsan you <u>zhihui</u>.*
      1SG must   feel-evi   Zhangsan have wisdom
      Lit: Zhangsan must be wise to me.   (***speaker=j; NonAmb-N***)

(77) **Lisi yiding** ganjue-**dao** Zhangsan you wenti.
      Lisi must   feel-evi   Zhangsan have question
      Zhangsan must be troublesome to Lisi.   (**speaker≠j;** AMB-N)

(78) **Lisi yiding** ganjue-**dao** Zhangsan you zhihui.
      Lisi must   feel-evi   Zhangsan have wisdom
      Zhangsan must be wise to Lisi.   (**speaker≠j;** NonAmb-N)

As a *potential* obviator, *hen* could significantly improve those infelicitous data (69) and (70), as illustrated in (73) and (74). *hen* only requires that the prejacent is in the speaker's knowledge, but it doesn't specify whether it's known directly or indirectly. Continuations that states the lack of direct experience as in (73) and (74) are thus felicitous. This also supports the claim of AK (2018) that the indirectness of epistemic 'must' is anchored to the speaker whereas the directness requirement of the subjective predicate like *ganjue-dao* is embedded in subject DP's kernel, which is a set of propositions which we have direct knowledge of. Contradiction thus gets circumvented when the DP and the speaker are not co-referring to one single individual, as shown in (77), (78). I'll get back to this with more detailed discussions in the final chapter, as this section is a focused examination on the diagnostics of taste predicates.

3.2   More about subjectivity, evidentiality, and directness

The kinds of evidential meaning given by -*dao* would be "direct experiential evidence", in a sense that the judge is explicitly spelled out, who has first-hand (i.e., direct) experience about the proposition. As illustrated by (69) and (70), the judge 'I' asserts a judgmental statement about *Zhangsan*, but then the judge cancels her assertion of directness. This gives rise to contradiction.

Regarding subjectivity, Bylinina (2014) suggests that it essentially concerns *relative truth*, in which there are statements whose truth is a matter of opinion rather than a matter of fact. And as mentioned, the key diagnostics is called subjective disagreement in the literature (Stephenson 2002, Murray 2010, Murray 2017, Nutys 2001, Morzycki 2016). Foolen et al. (2018) gives an extensive discussion about evidentiality and suggests that evidentiality essentially refers to the linguistic encoding of the speaker's information *source* for a proposition. There are three types of evidential expressions: (i) conveying that the speaker witnessed the event (called direct evidentiality); (ii) was told about it, (reportative evidentiality); (iii) conjectures in the here and now that it happened (inferential and assumed evidentiality). The latter two types of evidentiality are *indirect* because they express that the information is not first-hand. Evidentiality has been claimed to be closely related to certainty, namely information force (*strong versus weak*).

Boye and Harder (2009) suggests that markers of *direct* evidentiality express a higher degree of certainty than markers of *indirect* evidentiality.

PPT manifests itself as an interaction of the above two linguistic phenomena: subjectivity and evidentiality. As a sub-phenomenon of subjectivity, PPT has an 'evidential' nature, in a sense that it encodes *directness* in its interpretation. This relation has been spelled out in Bylinina (2014), which argues that PPTs introduce a thematic adjunct that presumably corresponds to the role of *judge*. Crucially, this judge phrase has a thematic relation with the PPT. As a consequence of her analysis, not all subjective predicates project a *judge*-phrase (i.e., only PPT-type of subjective predicates do). And for subjective predicates that do not project a judge phrase, they also do not exhibit the semantic effects of thematic relation between the judge and the subjective predicate, namely, the *direct* experience requirement. This is an important point in that it separates the licensing of 'judge'-PPs from subjectivity, and relates 'judge' phrase to the experiential/evidential semantics of PPTs instead.

3.3   Evidentiality and the *ganjue-dao* test

I devote this section to arguing that Mandarin Chinese lexicalizes the the *find* test and the acquaintance inference test with an evidential morpheme *dao*. They interact with *dao* directly. Notice that this evidential morpheme is not the trigger that makes the '*you* NP' predicate subjective–again it's the post-*you* noun that's playing the critical role. When attached to perception verb, *dao* behaves like a prepositional phrase. Parallel to the English overt PPTs, *dao* can saturate a judge argument but realize this argument in the subject position.

I suggest that the source of language variation lies in lexicon. Therefore, Noun plays a crucial role. *-dao* has its property and constraints as an evidential morpheme, making it incompatible with certain nouns. Property possessive concept noun inherently denotes Non-PPT subjectivity Korotkova (2016).

Mandarin lexicalizes the directness meaning by affixing the evidential morpheme *-dao* to perception verbs such as *ganjue* 'feel' (79), (80). *ganjue* allows its complement predicate to be an inference based on reasoning without first hand experience (79); whereas *ganjue-dao* requires direct evidence (80). *-dao* is sensitive to AI, making *ganjue-dao* the closest thing to *find* in Mandarin.

(79)   *Wo ganjue Lee ᵢ   you   xiangfa, dan mei jian-guo taᵢ ti-chu*
        1SG feel   Lee have thought, but   NEG see– EXP.PERF 3SG come-up
        shenme dianzi.
        any   idea
        'I feel Leeᵢ is creative, but (I) never saw him/herᵢ come up with any idea.'

(80) *Wo ganjue* **dao** *Lee$_i$ you   xiangfa,* # *dan mei jian-guo ta$_i$ ti-chu*
       1SG feel   evi   Lee have thought, but   NEG   see– EXP.PERF 3SG come-up
       shenme dianzi.
       any   idea
       'I find Lee$_i$ creative, but (I) never saw him/her$_i$ come up with any idea.'

I argue that this evidential morpheme *dao* presupposes first hand experience when affixed to a perceptual verb. This proposal defends a (pre-existing) position that the evidential morpheme *dao* belongs to 'direct' with regards to information source whereas perceptual predicates without *dao* are possible to have the reading that is based on inferential information. *dao* in Mandarin Chinese is a versatile lexeme that can be used in a variety of syntactic contexts. Its basic use is as a motion verb, meaning 'to reach, to get to, to arrive', as illustrated by the following example:

(81) *Quanjia   dao hebian   wan.*
       whole.family dao river.bank relax
       The whole family went to the river area to relax.

Another use of *dao* is as a preposition, indicating a temporal or spatial scope, as shown in (82) and (83) respectively.

(82) *Dao chifan   de   shihou.*
       dao eat.meal MOD time
       At the time of the meal

(83) *Ban   dao chuangshang*
       move dao bed:up
       Move (something) to the bed

dao following a verb can introduce verbal or clausal complements of various types. One such case is illustrated in (84), where there is a clause serving as a complement:

(84) *Wo neng ganjue-dao ta   de   xin   he wo de   xin   yiyang dongdongde tiao.*
       1SG can feel-evi   3SG MOD heart as 1SG MOD heart same   pounding   beat
       I can feel that his/her heart was beating just as heavily as mine.

The evidential morpheme *dao* can attach to other perception verbs besides *ganjue* 'feel' (85). When the complement clause is associated with actual perception, the directness evidential morpheme *dao* is suffixed to the perception verb *ting* 'listen' (85a). By contrast, the attitude report morpheme *shuo* is affixed to *ting* when the information is obtained through hearsay (85b).
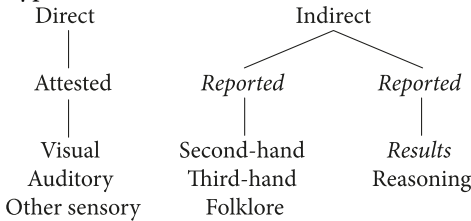
(85) a. *Wo ting-**dao**   ta   cong lou-shang shuai xia-lai.*
          1SG listen-reach 3SG from upstairs   fall   downward
          I heard he/she falling from upstairs.   (actual perception)
      b. *Wo ting-**shuo**   ta   cong lou-shang shuai xia-lai.*
          1SG listen-report 3SG from upstairs   fall   downward
          I've heard that he/she fell from upstairs.   (hearsay)

Furthermore, some diachronic evidence from Chen and Tao (2014) supports the argumentation that the morpheme *dao* is associated with evidentiality, transitivity, and thus subjectivity. Chen and Tao (2014) points out that grammaticalization and subjectivization comes together, from a diachronic perspective.

It's worth mentioning that the semantics of -*dao* is evidential. Features such as *transitivity* and *subjectivity* are intermediate byproducts and consequences of having an evidential semantics. Evidentiality concerns the source of evidence, which is not a domain in which *subjectivity* gets defined.

Apart from the diachronic evidence, the way typology captures the evidentials illustrates a similar pattern. Details of the taxonomy of evidentials discussed in Matthewson et al. (2007) and Willet (1988) are illustrated in (86). To put evidentiality in a broader picture, (87) and (88) are some cross-language data about how evidentiality as a marker of information source behaves.

(86) Types of Evidence   (Willett 1988, p. 57)

Direct	Indirect	
Attested	*Reported*	*Reported*
Visual	Second-hand	*Results*
Auditory	Third-hand	Reasoning
Other sensory	Folklore	

(87) Cuzco Quechua (Quechuan; Peru) (adapted from Faller 2002, p. 3)
      a. *para-sha-n=**mi***
          Rain-prog-3=dir
          'It is raining, ***I see***.'   Firsthand
      b. *para-sha-n=**si***
          rain-prog-3=rep
          'It is raining, ***I hear***.'   Hearsay
      c. *para-sha-n=**chá***
          rain-prog-3=conj
          'It must be raining, ***I gather***.'   Conjecture

(88)   Range of meanings of *mi* in Cuzco Quechua
   a.   Knowledge from encyclopedia
         *Africa-pi-**n**   elefante-kuna-qa ka-n*
         Africa-loc-dir elephant-pl-top   be-3
         'In Africa, there are elephants.'   (Faller 2002: p. 132, ex. 100b)
   b.   Faith
         *Dius kan-**mi**.*
         God be-dir
         'God exists.'   (Faller 2002: p. 132, ex. 99)

Izvorski (1997) has discussions about evidential perfects, describing the (present) perfect morphology that signals hearsay and inference, which is especially common in Anatolia-Balkans-Caucasus region. According to de Haan (2013) the World Atlas of Language Structures (WALS) Online, 237 out of 414 languages in WALS dedicated grammatical means to talk about information source.

(89)   Georgian (South Caucasian; Georgia, Azerbaijan)
         C1: My brother says that the dragon hid the treasure.   Hearsay
         C2: The dragon's cave is empty.   Inference
         *urtSxul-s   gandZ-i   **daumalia***
         Dragon-dat treasure-nom hide.3sg.s.3sg.O.**ind**.pst
         'The dragon hid the treasure, *I hear/infer*.'

I argue that the post-verbal *dao* adds the meaning that the agent expresses heightened senses and a high degree of transitivity, which is often related to direct perceptual encounters (Chen and Tao, 2014). *ganjue-dao* is concerned with evaluation over a specific situation, and it entails an event of direct encounter of the object (Fang, 2016). Several commonly used diagnostics that can identify an event argument in the predicate position include the plausibility of locative and temporal modifiers, and the existence of manner adverbs (Maienborn, 2005). *ganjue-dao* can co-occur with them (90).

(90)   a.   *Zai zheli wo ganjue dao ta   hen you zhihui.*
             At   here 1sg feel   evi 3sg hen have wisdom
             'Here I had a feeling that he/she was wise'   (locative modifiers)
       b.   *Xianzai wo ganjue dao ta   hen you zhihui.*
             Now   1sg feel   evi 3sg hen have wisdom
             'Now I had a feeling that he/she was wise.'   (temporal modifiers)
       c.   *Wo jianjian   ganjue dao ta   hen you zhihui.*
             1sg gradually feel   evi 3sg hen have wisdom
             'I gradually starts to feel that he/she is wise.'   (manner adverbs)

Note that the *hen* sentences are compatible with both the Individual-level predicate (IL) and the Stage-level predicate (SL). On the other hand, Fang (2016) also claims that the *hen* sentences are licensed under both *ganjue* and *ganjue-dao. hen* forms can be used to express both the observation of direct perceptual encounters of the object and the interpretation based on inferential deduction. Despite of (90) indicating that *ganjue-dao* takes SL predicates, it does not necessarily isolate the *ganjue-dao*'s selections of a IL predicate. I will look into that in future studies.

4.   Quality denoting noun

4.1   Quality noun vs. non-quality noun

According to Francez and Koontz-Garboden (2017), property concept lexemes come in two semantic varieties: those that characterize individuals (like *wise*) and those that denote qualities (like *wisdom*). They further points out that individual-characterizing property concept lexemes can be nouns as well as adjectives, whereas quality-denoting property concept lexemes are *never* adjectives, always nouns or precategorial roots, as in Ulwa. FKG (2017) has been focused on finding systematic patterns of variation (and explanations thereof), rather than positive universal features present in all languages. In line with the generativist view that what is universal in language is not particular categories but constraints on variation, I attempt to search instead for *systematic constraints on denotation* that can be argued to follow from category membership.

   While property nouns are quality denoting, adjectival nouns are individual characterizing. Property nominals trigger possession in predication (91a), but the adjectival nouns predicate noun-possessively (91b).

(91)   a.   she is luck/has luck.
         b.   She is quiet/#has quiet.

Even languages that have an open and very large class of adjective do not seem to have any quality-denoting adjective. The definition of 'qualities' in Chapter three of FKG (2017, p. 37–56) makes two assumptions about their structure:

1.   "*qualities are partially ordered by a mereological part-of relation. Namely, qualities are mereologically structured.*
      –   the prediction made by this assumption is that, quality-denoting nouns should pattern with mass nouns in the familiar environments that trace mereological structure.

2. *qualities are ordered by the size preorder ≤, which is the main ingredient of the proposed semantics of gradability and comparison for possessive property concept sentences*"

Being ordered by the total preorder ≤ is what distinguishes qualities from the denotations traditionally assumed for substance mass nouns like *water* or *sand*, which are only ordered by the mereological partial order. FKG (2017) argue that nouns that are plausibly quality denoting are unambiguously mass. Illustrated below are some diagnostics, suggesting that quality denoting nouns patter with substance mass nouns, but not with count nouns.

As illustrated in (92), (93), (94), different from count nouns such as *dog,cat*, substance mass nouns or quality denoting nouns cannot be modified by *each*.

(92) count nouns
      each/every dog/cat/rainbow/whisker/kitten

(93) substance mass nouns
      ?each/every rice/beer/wind/sand

(94) quality denoting nouns
      ?each/every courage
      ?each/every anger

And *little* and *much* are acceptable only with mass nouns. Quality-denoting nouns behave like ordinary mass nouns in appearing in the partitive construction as shown below.

(95) quality-denoting nouns
      a lot of anger
      a great deal of wisdom

However, quality denoting nouns and substance mass nouns are not exactly the same. The following sections concern scenarios where these two classes of nouns get teased apart.

4.2   Quality noun vs. mass noun

The descriptive and expressive contents of *wh*-exclamatives always involve a gradable notion. This gradable notion can be explicitly mentioned (96a), or it can be left for contextual inference (96b) (FKG 2017).

(96) a.   What a beautiful movie!
      b.   What a movie!

(97) (Wow,) John bakes delicious desserts!   (sentence exclamation)

(98) (My,) What delicious desserts John bakes!   (*wh*-exclamative)
      (Boy,) Does John bake delicious desserts!   (inversion exclamative)
      (My,) The delicious desserts John bakes!   (nominal exclamative)

An observation noted for Italian as reported in Tovena (2001) holds also for English, which says that *wh*-exclamatives with plural count nouns and ordinary mass nouns cannot generally be associated amount readings. For instance (99a), (99b) can be used to exclaim that Sandy has very beautiful dogs or that the neighbors have very well-behaved children; they cannot be used to exclaim that Sandy has (surprisingly/impressively …) many dogs, or that the next door neighbors have (surprisingly/impressively …) many children.

(99) a. (My,) What dogs Sandy has! ≠ Sandy has so many dogs!
      b. What children the next door neighbors have! ≠ The next door neighbors have so many children!

Exactly the same is the case for ordinary mass nouns (100). While (100a) can be used to exlaim that the Aegean has very pleasant (clean, etc.) water, and (100b) can be used to exclaim that the Plastic Albatros bar has excellent whiskey, these sentences cannot be used to exclaim that there is a lot of water in the Aegean or that the Plastic Albatros has a lot of whiskey.

(100) a. What water the Aegean has! ≠ How much water the Aegean has!
       b. What whiskey they have at the Plastic Albatros! ≠ How much whiskey they have at the Plastic Albatros!

This behavior of mass nouns (and plurals) in *wh*-exclamatives contrasts sharply with that of quality-denoting property concept lexemes. With such lexemes, the amount reading is by far the most unmarked one (101). A speaker uttering (101a), (b), (c) is committed to Kim having much courage, much beauty, or much wisdom respectively, and her utterance is paraphrasable as a sentence exclamation that is explicitly about amount (FKG 2017).

(101) Evidential?? AI related??
       a. (My,) what courage Kim has! ≡ Kim has so much courage!
       b. (My,) what beauty Kim has! ≡ Kim has so much beauty!
       c. (My,) what wisdom Kim has! ≡ Kim has so much wisdom!

The contrast between quality-denoting property concept lexemes, and mass nouns comes out particularly clearly with contrastive minimal pairs. The sentences in (102) are truth-conditionally equivalent, whereas the sentences in (103) are not.

(102) I didn't know what courage she had.
       ≡ I didn't know she had so much courage/was so brave.

(103) I didn't know what soup they sell.
       ≢ I didn't know they sell so much soup.

The same observation can be made contrasting *what*-exclamatives with *how much*-exclamatives, where an amount is compositionally introduced. With property concept nominals, the two exclamative types are equivalent, and both are further equivalent to a corresponding adjectival *how*-exclamative if there is one. This is shown in (104). With ordinary mass nouns, however, this equivalence breaks down for most native speakers, as shown in (105).

(104) a. What strength Kim has! ≡
       b. How much strength Kim has! ≡
       c. How strong Kim is! ≡

(105) What blood you have! ≢
       How much blood you have!

The emerging generalization is that *wh*-exclamatives are an environment that differentiates quality nouns and other mass nouns. While the former are most natural on an amount reading, the latter, when acceptable, only have a contextually determined property extent reading.

FKG (2017) explain that the qualities are preorderred by size whereas mass nouns are not. As mentioned above, the descriptive and expressive contents of *wh*-exclamatives are always built on a gradation. Quality-denoting property concept lexemes lexically provide a scale, namely the scale created by the preorder $\leqslant$.

Quantities of masses are not given by their part-whole structure inherent in the denotation of mass nouns, but rather imposed externally by such measures as volume, weight, etc. Such measures are not inherent to the lexical entry of a mass noun, and this, FKG submit, is why *wh*-exclamatives cannot pick up on amounts of mass substances without explicit contextual cues, and perhaps also a semantic coercion process which maps part of masses to a totally ordered scale of amounts by means of a measure function.

Another diagnostics concern behavior under modification. On a property extent reading, distinguished from the irrelevant dimensional reading available for *big* and *huge*, some nouns can be modified by these modifiers (106) and others cannot (107).

(106) a. a big/huge/major disaster
       b. a big/huge/major idiot

(107) a. #a big/huge/major American
       b. #a big/huge/major sportscar

Morzycki (2016) suggests that the noun *big sportscar* in (107b) cannot be used to describe a sportscar that is in some way more of a sportscar than what normally counts as a sportscar. This contrasts *sportscar* with nouns like *disaster* or *idiot*. The phrase *big idiot* can, and normally would be, used to describe an individual who is more of an idiot than other idiots, and the phrase *major disaster* would normally be used to describe a disaster which is more disastrous than others.

(108)   a.   an utter/complete/absolute/outright disaster
         b.   an utter/complete/absolute/outright idiot

(109)   a.   #an utter/complete/absolute/outright smoker
         b.   #an utter/complete/absolute/outright basketball fan
         c.   #an utter/complete/absolute/outright American
         d.   #an utter/complete/absolute/outright sports car

What is clear, however, is that both *big* class and *utter* class modifiers diagnose gradability in nouns. FKG (2017) observe that the modifiers Morzycki documents also separate quality nouns from mass nouns, in the expected way. Many of those nouns that we claim are quality nouns and that therefore have ⩽ -ordered denotations are acceptable with both classes of modifiers (FKG 2017, p. 128):

(110)   a.   huge courage
         b.   big beauty
         c.   major wealth

Ordinary mass nouns, by contrast, are quite straightforwardly unacceptable:

(111)   a.   #big/huge/major water
         b.   #big/huge/major gold

(112)   a.   #utter/complete/absolute/outright water
         b.   #utter/complete/absolute/outright gold

Their proposal is that these modifiers are sensitive to the total ordering in the denotation of the noun they modify. Just like a big idiot is a predicate that holds of an idiot who outranks other idiots in idiocy, so *big beauty* is a predicate that holds of a portion of beauty that outranks other portions of beauty on the ⩽ ordering. What is clear, however, is that they all require gradability of their modifier, and that the ⩽ relation-ordering qualities makes quality nouns gradable. Basically the facts reported in this section constitute strong evidence in favor of our proposal that quality nouns differ from other mass nouns in having denotations that are totally ordered by size.

Tovena (2001) observes that the modifier *certain* (and its French equivalent) has special properties when used with certain abstract mass nouns, and with ordinary mass nouns, as in (113), *a certain* triggers a kind-type reading.

(113) a. Mary always drinks a certain wine for dinner.
       b. Mary went to every Asian market in town just to get a certain rice.

The situation is different, Tovena (2001) observes, with abstract mass nouns, the examples of which are property concept nominals, presumably quality denoting, as illustrated in (114).

(114) a. I find a certain beauty in this picture.
       b. She moved with a certain grace.

That something other than a kind-type reading is available is made clear by the fact that a continuation denying a kind-type reading does not give rise to infelicity, as shown in (115). A similar continuation with a non-quality mass noun leads to contradiction (116).

(115) I'd like the house to have a certain beauty, but I don't care what kind of beauty it is (simple, sophisticated, rustic, modern, etc.).

(116) #Mary always drinks a certain wine for dinner. She doesn't care what kind it is.

Additionally, a continuation specifying a quantity is odd with a mass noun, but fine with a property concept noun (117).

(117) a. #Mary has a certain wine, definitely more than Bill has.
       b. Mary has a certain beauty, definitely more than Bill has.

What these data show is that *a certain* modification with property concept nominals gives rise to an amount reading that is not available with ordinary mass nouns. This points to exactly the same conclusion as was reached above for Morzycki's modifiers, namely that property concept nouns are gradable in a way that mass nouns are not, and again this is explained immediately on our assumption that qualities are lexically ordered by ≤ whereas mass nouns are not. Mapping mass nouns to amounts requires a measuring function, which must be supplied compositionally, or introduced, presumably by means of coercion, by an explicit context.

Another modifier that gives rise to amount readings with property concept nouns but not with other mass nouns is French *tel/pareil* 'such', as pointed out by Tovena (2001, p. 571), and reported in Tovena (2001). Another piece of evidence supporting our hypothesized order-theoretic difference between qualities and masses.

(118) a. It is rare to find such courage in a young person.
       b. It is exciting to find such beauty in a debut.

(119) a. It is rare to find such water in this part of the world.
       b. It is common to find such gold in a ring.

Examples (118a), (b) are statements about large amounts (of courage, beauty). Both sentences can be paraphrased with *so much* replacing *such*. This is not the case for (119), which can be about kinds, but not about amounts. Neither sentence in (119) can be paraphrased with *so much* replacing *such*. The contrast is brought out clearly with the minimal pairs in (120). While (120a) is perfectly coherent, (120b) is a contradiction.

(120) a.   Such courage is much more than I expected to see tonight.
       b. #Such wine is much more than I expected to drink tonight.

As with the previous cases, this contrast in the availability of amount readings is immediately explained by the assumption that property concept nouns denote qualities and that qualities, unlike masses, are totally ordered by ⩽ .

4.3 Expansion to the Chinese data

In brief, quality-denoting nouns pattern with ordinary mass nouns. FKG (2017) take these facts as evidence that quality-denoting nouns, like ordinary mass nouns, have a mereologically structured denotation. Quality nouns differ from other mass nouns in that the qualities they denote, unlike the masses denoted by other mass nouns, are totally ordered by size (FKG 2017). Relevant environments include: negative quantifiers; exclamatives; behavior under modification: 'a *certain*' modifier (121), French *tel/pareil* 'such'–a modifier that gives rise to amount readings with property concept nouns but not with other mass nouns, and Wolof (a Niger-Congo language) degree modifiers and comparatives.

(121) a. #Mary has a certain <u>wine</u>, definitely more than Bill has.   (mass noun)
       b. Mary has a certain <u>beauty</u>, definitely more than Bill has.

                                                        (quality-denoting noun)

Essentially, qualities, the denotations of possessive-predicating property concept lexemes, share with masses (the denotations of mass nouns) the property of being mereologically ordered, and differ from masses in being totally ordered by a pre-order ≤, thought of as a 'size' relation.

   I argue that the mass/count distinction cannot completely capture how subjective '*you* NP' patterns, neither could abstract/concrete do. But the notion of 'quality-denoting' can. I expect to formalize the 'quality'-denoting noun in Man-

darin Chinese in a falsifiable way, adopting the denotations in FKG (2017). Mandarin Chinese is a classifier language, which is typically thought of as having all bare nouns denoted as kinds. But there is still a mass/count distinction, seen in the Chinese example in (122), which is extracted from Cheng and Sybesma (1999):

(122) a. *san bang (de) rou*
   three CLF:pound MOD meat
   'Three pounds of meat' (mass noun)
   b. *jiu gen * (de) weiba*
   nine CLF MOD tail
   'Nine tails' (count noun)

There is a clear diagnostic for this distinction; the particle *de* can intervene between the classifier and the head noun. However, as shown in (122) mass noun can be concrete (*rou* 'meat') and count noun can be concrete as well (*weiba* 'tail'). And neither *rou* 'meat' nor *weiba* 'tail' gives rise to subjectivity when combined with the possessive morpheme *you*, as illustrated by one of the PPT tests (123).

(123) a. *Zhangsan you rou, dan wo mei jian-guo.*
   Zhangsan have meat, but 1SG NEG see-EXP.PERF
   Zhangsan has meat but I've never seen it.
   b. *Zhangsan de gou you weiba, dan wo mei jian-guo.*
   Zhangsan MOD dog have tail, but 1SG NEG see-EXP.PERF
   Zhangsan's dog has a tail but I've never seen it.

The mass/count and the abstract/concrete distinctions don't seem to be the whole picture. I argue that it is the quality denoting noun that gives rise to subjectivity. Here the *yidingde* 'a certain' test appears to show a contrasting effect on pinpointing what types of post-*you* noun denote 'quality'.

(124) a. # *Ta you yidingde shouji, juedui duo-guo wo.*
   3SG has certain phone, definitely more-than 1SG
   Lit: He/She has a certain phone, definitely more than I have.
   b. *Zhe pian wenzhang you yidingde shendu, juedui duo-guo na pian*
   This CLF paper has certain depth, definitely more-than that CLF
   wenzhang.
   paper
   This paper has a certain depth, definitely more than that paper has.

To put all the pieces together, in this proposal, taste predicates are restricted to (125-1-b) and (125-2), as have been boldfaced.

(125)   Nouns that occur after *you*
  1. *Potentially* quality-denoting nouns
     (*two-way ambiguous: (a) countable & specific ; (b)* **quality-denoting** *.*)
     –*wenti* 'question'; *shendu* 'depth'; *xiangfa* 'thought'
  2. *Unambiguously* **quality-denoting nouns**
     –*xuewen* 'knowledge'; *zhihui* 'wisdom'
  3. countable & specific nouns
     –*shui* 'water'; *shouji* 'phone'

What '*you* NP' tells us about subjectivity is summarized in (126).

(126)   AI: acquaintance inference;
        FD: faultless disagreement; FIND: embedding under *find*

	Positive	Comparative
Non-quality-denoting noun	-FD,-FIND,-AI	-FD,-FIND,-AI
Quality-denoting noun	+FD,+FIND,+AI	+FD,+FIND,+AI

5.   Theoretical landscape

5.1   Connecting possessive property concept with *you* NP

When we talk about property concepts we are essentially talking about adjective types. Dixon (1982) described seven broad categories of property concepts that adjectives fall into: dimension, age, value, color, physical, speed, and human propensity. *Human propensity* concerns adjectives such as *jealous, smart, happy, kind*, etc., which appears to be highly associated with subjectivity Kennedy (2013). FKG (2015) note that the sentences in (127) are (broadly) semantically equivalent.

(127)   a.   Floyd has knowledge.
        b.   Floyd is knowledgeable.

Francez and Koontz-Garboden thus argue that these two sentences should be analyzed the same way. There are extensive discussions about a lot of convincing foreign language data. Among them, the morpheme *-ka* in Ulwa is a famous example illustrating the two strategies manifested in Ulwa possessive NPs as well as property concepts roots. For lots of languages, the way to assert 'Clyde is strong' is to say 'Clyde has strength'. It makes sense for these languages to use possessive or the nominal to express property concept, where a lot of familiar languages use adjectives. If we think of property concept of 'strength' as core to convey 'Clyde is strong', it is sensible to have this morphological process of 'have + strength'. In

other words, 'Clyde has strength' in these languages can be interpreted as 'Clyde possess maximal portion of strength'. Examples are given in (128).

(128)   Possession/property concept *-ka* syncretism in Ulwa
    a.   *yang as-ki-na*   *minisih-ka.*
        1SG   shirt-⟨1SG.POSS ⟩ dirty-3SG.POSS
        'My shirt is dirty.'   Green (2013) (asna)
    b.   *Alberto pan-ka*
        Alberto stick-3SG.POSS
        'Alberto's stick'   Green (2013) (0405–829)

The basic Ulwa pattern is discussed in extensive detail in FKG (2015; 2017). The words that are translated into English adjectives are nouns, derived from morphologically bound roots by affixing the morpheme *-ka. –ka* is also the morpheme that marks the possessed noun in a possessive NP. As illustrated in (128), one and the same suffix is involved. The vast majority of property concept sentences in the language show the same pattern. According to FKG (2015; 2017), Ulwa is clearly a language in which PC sentences are predominantly possessive. The starting point is the simplified denotation for possessive NP *-ka* in Ulwa language as shown in (129), (130).

(129)   -ka property concept = $\lambda P\langle p,t\rangle,\lambda x.\exists z\pi(x,z) \,\&\, P(z)$

(130)   -ka poss NP = $\lambda P\lambda x\lambda yP(y) \,\&\, (x,y)$ (FKG (2017), to be revised)

Here *-ka* can be a suffix to a PC root as well as a marker of possession on a possessed noun in a possessive NP. Those two denotations share a common lexical core, namely the possessive relation (π), but differ type-theoretically. (129) reads an individual has substance P iff there is a possessive relation (π) between x and z, and there is a portion p that is part of P. (130) says it takes a nominal meaning, and creates a relation between individual x and y, where y is a member of the set denoted by the N composed with. A crucial assumption made in FKG is that possessive NPs denote sets of possessed individuals, rather than generalized quantifiers.

    In order to argue that sentences (127), (128) should be analyzed the same way, FKG use something called a **substance**, which is an abstract mass entity like *wisdom* or *strength*. So for a sentence like (127a), the individual *Floyd* possesses a **portion** of *knowledge*. I treat a substance as a scale, and a portion as an interval in the degree-semantics sense. For instance, the degree *six feet* actually encompasses the entire span of the scale from 0 to 6 feet, rather than just a single point on the scale at 6 feet. According to FKG, while there are model-theoretic reasons to choose substances over scales, for the analysis of property concepts there is no material difference between the two. (131) is the definition of a substance.

(131)   For any portions $p,q \in A$ (where A is a non-empty set of portions),
$p \leq q \Leftrightarrow p \sqcup q = q$
"For any portions p and q in A, p is part of q if and only if the mathematical join (maximal element, roughly) of p and q is q."

Thus for a word like *wise*, a denotation would be (132).

(132)   wise = $\lambda p.\mathbf{wisdom}(p)$

(132) says "give me a portion p and I'll give you a portion of wisdom." Now we relate that to an individual, we get (133).

(133)   For any individual a and substance P, a has P iff $\exists p P(p) \wedge \pi(a,p)$
"For any individual a and substance P, a has P if and only if there is a portion p that is part of P and there's a possessive relation (π) between a and p."

Based on that, the denotation for *has* would be as in (134):

(134)   POSS = $\lambda P \lambda x \lambda D. \exists D z P(z) \wedge \pi(x,z)$

In (134), P is a substance, D is a variable over sets of portions, and $\exists D$ restricts the existential to elements of D. Now to put the pieces together, I list the computation steps of 'Floyd has wisdom' in (135).

(135)   Floyd has wisdom. = $\lambda p.\mathbf{wisdom}(p)$

(135) says "Floyd has wisdom iff there exists in the domain of portions a portion z that is a portion of wisdom, and Floyd is in a possessive relation with that portion z".

Later on FKG (2017) propose a revised version of *-ka* in Ulwa (p. 45 note 12), as sketched in (136):

(136)   Ulwa (FKG 2017)
a.   -ka (in possessive NPs) = $\lambda P \lambda x \lambda Q.\{z : \pi(x,z) \& P(z) \} \subseteq Q$
b.   -ka (on property concept roots) = $\lambda P \lambda x \lambda I \subset P.\exists I z \pi(x,z) \& P(z)$

Zhang's (2019) proposal is similar to what FKG (2017) propose for Ulwa, arguing that the Mandarin possessive morpheme *you* comes in two flavors (137).
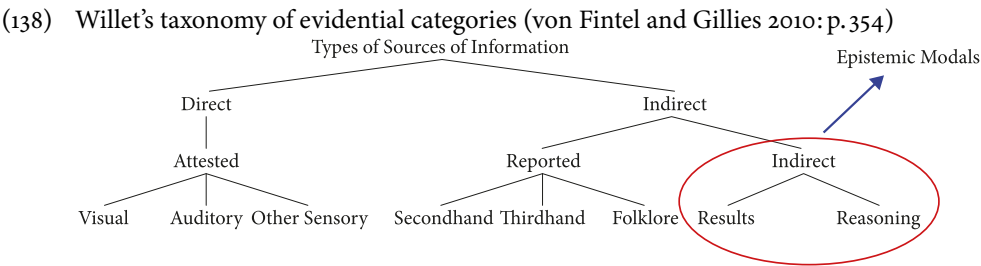
(137)   Mandarin (slightly revised version of Zhang (2019)
a.   youCO (with concrete objects) = $\lambda P \lambda x.\exists z \pi(x,z) \& P(z)$
b.   youPC (with property concept objects) = $\lambda P \lambda x \lambda I \subset P.\exists I z \pi(x,z) \& P(z)$

Here in (137), the superscript I is similar to d in degree semantics. But, again, (137b) does not capture the subjectivity characteristic and the directness requirement of the '*you* NP' structure, which distinguishes (137b) from (137a). I attempt

to use Kernel to formalize the distinct features I observed for the subjective '*you NP*' structure.

5.2 Using kernel to formalize the 'direct' proposal

vFG (2010) provides an insightful framework for direct knowledge. Built up on (138), vFG (2010) propose that seen as evidentials, epistemic modals are markers of indirect evidence, that is, the right most branch of Willet's system. (138) is a summary of the typical distinctions made in the rich evidential systems across languages.

(138)   Willet's taxonomy of evidential categories (von Fintel and Gillies 2010: p. 354)

Types of Sources of Information

Epistemic Modals

Direct
Indirect

Attested
Reported
Indirect

Visual   Auditory Other Sensory   Secondhand Thirdhand   Folklore   Results   Reasoning

Their thesis is that 'must' carries an evidential signal, which can be formalized using Kernels (K). Kernels refer to information that is direct (enough) in the context. Core data is given in (139).

(139)   Billy seeing the pouring rain, uttered:
    a.   It's raining.
    b. ^{??} It must be raining.

(140) is in contrast with the scenario in (139). If Billy sees people coming in from outside with wet umbrellas, slickers, and galoshes, then she can report with either the moralized claim or its bare prejacent, even if she knows that rain is the only explanation. Either will do, as illustrated in (140).

(140)   Seeing wet rain gear and knowing rain is the only possible cause:
    a.   It's raining.
    b.   It must be raining.

Different from (140), in (139) Billy has direct information that it is raining. Namely, the contextually supplied Kernel directly settles. The kernel settles the prejacent–this conflicts with 'must's evidential signal. Therefore (139b) is infelicitous. Epistemic modal signals that Billy's information isn't direct when it is. The discussion boils down to four key points:

1. $\cap K$ may entail p without K directly settling whether p

2. K directly settles whether it's raining in perception but not in inference
3. 'must' presupposes a lack of direct settlement
4. this accounts for the contrast of perception and knowledge

In particular, whether some question Q is directly settled boils down to whether there is an independent bit of direct information that answers the Q. Given a Kernel K, the Q (whether p) is a directly settled issue re K just in case p is either entailed or contradicted by one piece of direct information explicitly given by the context. To put it formally:

(141)   K directly settles whether p iff
            either $x \subseteq p$ or $x \cap p = \varnothing$ for some $x \in K$.
            Namely, K directly settles whether p iff
            $\exists q \in K\, q \subseteq p \vee q \subseteq \neg p$

Adopting the insight of this Kernel proposal, AK (2018) denotes predicates of personal tastes (142).

(142)   This puerh is delicious.
            The puerh is delicious $c,\langle w,j,K_{j,w}\rangle$
            $= \lambda o: K_{j,w}$ directly settles whether puerh is delicious for j in w. 1 iff puerh is delicious for j in w

1. $tasty^{\,c,}\langle ^{w,j,k}_{\quad j,w}\rangle$ directly settles whether o is tasty for j in w. 1 iff o is tasty for j in w
2. $K_{j,w}$ directly settles whether p iff $\exists q \in K_{j,w}\, q \subseteq p \vee q \subseteq \neg p$

6.   Proposed analysis

6.1   Denotations and computations

Quality possession (FKG 2017) states that the term 'property concept', in the sense employed here, does not correspond to any familiar theoretical object in generative linguistic theory. It is meant as a cognitive term, not one to be defined in terms of a formal theory of grammar. Possessive property concept sentences relate individuals and portions of qualities by a binary relation, which is represented by the constant π. An individual is said to possess a quality if and only if there is a portion of that quality such that the individual and the portion stand in the π relation. Crucially, one way to bring in context dependence is to insist that the relation π is in fact gradable, and that an individual can bear π to a portion of a quality to a certain degree. I propose the denotations of post-*you* noun based on FKG (2017). I argue that the post-*you* noun is the lexical item that the judge parameter ties to.

The judge dependency comes in the meaning of the noun predicate, given that the data have shown that when plugged in different nouns, '*you* NP' has different flavors, either OP or PPT. (143) characterizes nouns that occur after *you*: A–countable & specific noun c.f.(39); B–*unambiguously* quality-denoting noun associated with portion (*p*) c.f.(38); A or B–*potentially* quality-denoting noun c.f.(37).

(143) Nouns that occur after *you*:

Type of N	$you^{c,\langle w,j,k_{j,w}\rangle}$	Post-*you* N	Glosses
A. $\langle e,t\rangle$	$\lambda f_{\langle e,t\rangle}\,\lambda x.\exists y f(y)\wedge\pi(y,x)$	*shu*	'book'
B. $\langle p,t\rangle$	$\lambda f_{\langle p,t\rangle}\,\lambda x.\exists y^P f(y^P)\wedge\pi(y_p,x)$	*zhihui*	'wisdom'
A or B	$you\_A^{c,\langle w,j,K_{j,w}\rangle}$ or $you\_B^{c,\langle w,j,K_{j,w}\rangle}$	*wenti, xiangfa, jihua*	'question', 'idea', 'plan'

Here y^p denotes a quality-denoting individual that takes in portion. 'take in' means that it's a function and it's dividable into portions. y denotes an ordinary countable specific individual. A and B share a common lexical core (the possessive realtion π) but differ type theoretically. This is in the same line of FKG (2017). A post-*you* noun such as *wenti* 'question' is two-way ambiguous. It can be interpreted as either a specific noun (*shu* 'book') or a quality-denoting noun (*zhihui* 'wisdom'). The $\langle p,t\rangle$ type of predicates presuppose directness in terms of information source.

The category relation between PPTs and FKG-style PC predicates seems unfalsifiable, if there is any. Whether or not this correlation is generalizable is open to discussion. An initial characterization is that property concept predicates are not always associated with subjectivity. There are property concepts that are not subjective as illustrated in languages like Ulwa (FKG 2017), while some property concepts in languages such as Chinese show subjectivity features. Thus in a generativist view, it is not the property concept construction (i.e. '*you* NP') that gives rise to subjectivity. There is no indication of the possessive morpheme *you* giving rise to any subjectivity either. Therefore, I highlight that the post-*you* noun should be the lexical item that the judge parameter should tie to. AK (2018) encode the judge parameter in the adjective *tasty*. By parallel, I am going to have the noun connected with the judge (144, 145).

(144) The semantics for noun predicate in (37b)
    (objective predicate; non-quality noun; $\langle e,t\rangle$)
    $jingyan_1^{\,c,\langle w,j,K_{j,w}\rangle} = \lambda y.f(y,w)$

(145)   The semantics for noun predicate in (37a)
(subjective predicate; quality noun; $\langle p,t \rangle$)
jingyan $_2$ $^{c,}\langle\,^{w,j,K}_{\quad j,w}\rangle$
$= \lambda\,y^\wedge p.\exists q \in K_{j,w}: q \subseteq \lambda\,$w'**skillfulness**$(y^\wedge p)(w') \vee q \subseteq \lambda\,$w' ¬ **creativeness**$(y^\wedge p)(w')$

A kernel (K) is a set of propositions that encode direct knowledge (vFG 2010). Directness is stored in judge's K on the *portion* of the post-*you* noun, which is of type $\langle p,t \rangle$. AK (2018) encode the judge parameter *j* in the adjective *tasty*. Similarly, (144, 145) get nouns connected with *j*. AK (2018) have K directly settle the predicate. K would thus be proposition related. (145) has *q* in K, which directly settles the proposition **skillfulness**. As a consequence, (144) gives rise to an objective predicate, since *you* combines with an entity. (145) compositionally derives a subjective predicate, given that *you* combines with a portion.

On the other hand, similar to the English attitude verb *find* (Kennedy 2013), *ganjue-dao* are related to a person's gut feelings and judgment based on personal experiences (Fang 2016). It is infelicitous to co-occur with non-subjective expressions (146).

(146)   a. # *Lisi ganjue dao konglong miejue le.*
      Lisi feel   evi dinosaurs extinct perf
      Lit: 'Lisi found dinosaurs extinct.'
  b. # *Lisi ganjue dao zhuozi shi   muto   de.*
      Lisi feel   evi desk   COP wooden PRT
      Lit: 'Lisi found the desk wooden.'

I propose the denotations for *dao* below.

(147)   Denotation of the directness evidential *dao* 'reach'
dao $= \lambda f\,$s,t $\lambda w \lambda p: \exists q \in Kj,wq \subseteq p \vee q \subseteq \neg p.f(p)(j)(w) = 1$

The semantics of (142) is applied to an evidential morpheme with a directness presupposition (147). (147) says that the judge has firsthand experience with the stimulus. With respect to *ganjue*, it differs from *ganjue-dao* in that *ganjue* allows judgment based on inferential evidence (148).

(148)   *Lisi ganjue Zhangsan$_i$ you xiangfa, dan mei yu   guo   ta$_i$.*
Lisi feel   Zhangsan have thought, but NEG meet EXP.PERF 3SG
Lisi felt that Zhangsan$_i$ is creative, but (Lisi) never met him/her$_i$.'

(149)   Denotation of DOX *ganjue* 'think'/'feel'
x ganjue α $^{c,}\langle\,^{j,w}\rangle$
$=1$ iff $\forall\,w' \in DOX_{x,w}\,\alpha\,^{c,\langle x,w'\rangle} = 1$

The doxastic *ganjue* in (149) is analyzed in a similar manner as in Stephenson (2007) regarding the judge dependent epistemic modals. She argues that attitudes quantify over ⟨att,w⟩ pairs.

The denotations in AK (2018) for covert PPTs are repeated below, which is in contrast with overt PPTs. The closest counterpart of 'bare PPTs' in Mandarin is the subjective '*you* NP' where the noun is of type ⟨p,t⟩, whereas the (English) overt PPTs are realized as the subjective '*you* NP' embedded under *ganjue dao* 'find' in Mandarin.

(150) Bare PPTs:
       The puerh is delicious $^{c,}\langle\, ^{w,j,K}_{\quad j,w}\,\rangle$
       = λo: $K_{j,w}$ directly settles whether puerh is delicious for j in w. 1 iff puerh is delicious for j in w
       Overt PPTs:
       a. delicious to $\alpha\ ^{c,i}$
       b. = λo: the kernel of $\alpha\ ^{c,i}$ in w at t directly settles whether o is delicious for α in w. 1 iff o is tasty for α in w (*Denotations in AK (2018)*)

Mandarin lexicalizes both the the *find* test and the AI test with an evidential morpheme *dao*, which can saturate a judge argument but realize this argument in the subject position (151), (152).[1]

(151) *jganjuedaop* ('*find*')
       =$\lambda w\lambda p{:}p \in K^{j,w}$). $\forall w'$ w' is compatible with what j feels in $w \to p(w')$

(152) *experiencer ganjuedao Zhangsanyouzhihui*
       ('*Zhangsan is wise to experiencer*')
       =$\lambda w\lambda p{:}p{\in}K^{experiencer,w}$. $\forall w'$ w' is compatible with what *experiencer* feels in w $\to \exists y^P$ $wisdom(y^P)(w') \wedge \pi(y^P, Zhangsan, w') \wedge wisdom(y^P))$

A type-structure tree is proposed in (154). Detailed computations are fleshed out below (155).

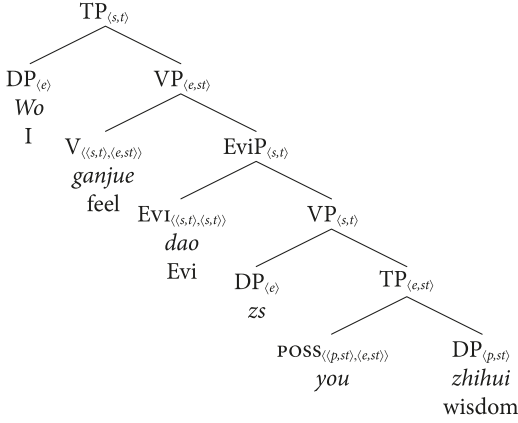(153) *Wo ganjue **dao** Zhangsan you zhihui.*
       1SG feel   evi Zhangsan have wisdom
       I find Zhangsan wise.

---

1. Here in (0), 'judge' (*j*) is taken as a 'perceiver', or an 'experiencer'. These three terms are used interchangeably.

(154)   'I find Zhangsan wise' in (153)

$TP_{\langle s,t\rangle}$
$DP_{\langle e\rangle}$ *Wo* I
$VP_{\langle e,st\rangle}$
$V_{\langle\langle s,t\rangle,\langle e,st\rangle\rangle}$ *ganjue* feel
$EviP_{\langle s,t\rangle}$
$Evi_{\langle\langle s,t\rangle,\langle s,t\rangle\rangle}$ *dao* Evi
$VP_{\langle s,t\rangle}$
$DP_{\langle e\rangle}$ *zs*
$TP_{\langle e,st\rangle}$
$POSS_{\langle\langle p,st\rangle,\langle e,st\rangle\rangle}$ *you*
$DP_{\langle p,st\rangle}$ *zhihui* wisdom

(155)   Computations

$$[[you]]$$
$$=\lambda f_{\langle p,st\rangle}\,\lambda x\lambda w.\exists y^p)f(y^p)(w)\wedge\pi(y^p,x,w)$$
$$[[you\ zhihui]]$$
$$=you(zhihui)$$
$$=\lambda f^{\langle p,st\rangle}\,\lambda x\lambda w.\exists y\,pf(y^p)(w)\wedge\pi(y^p),x,w)(wisdom)$$
$$=\lambda x\lambda w.\exists y^p)wisdom(>y^p)(w)\wedge\pi(y^p),x,w)$$
$$[[zs\ you.zhihui]]$$
$$=you(zhihui)(zs)$$
$$=\lambda f_{\langle p,st\rangle}\,\lambda x\lambda w.\exists y^p f(y^p)(w)\wedge\pi(y^p,x,w)(wisdom)(zs)$$
$$=\lambda x\lambda w.\exists y^p wisdom(y^p)(w)\wedge\pi(y^p,x,w)(zs)$$
$$=\lambda w.\exists y^p wisdom(y^p)(w)\wedge\pi(y^p,zs,w)$$

'*you* NP' that is embedded under 'find' *ganjue dao* is analyzed as an overt PPT. Now AI is a classic presupposition according to AK (2018). Different from English, Chinese has an evidential morpheme *dao* 'reach', which introduces the judge (*j*) and requires the judge to have direct evidence for the proposition/judgment. The full derivation steps are given below (156).

(156)   Computations

$[\![speaker\ ganjue\ dao\ zs\ you\ zhihuij]\!]$
$= [\![dao]\!]\ (\ [\![zs\ you\ zhinui]\!]\ )(\ [\![ganjue]\!]\ )(\ [\![speaker]\!]\ )$
$= \lambda f_{\langle\langle p,st\rangle,\langle p,st\rangle\rangle}\lambda f_{\langle p,st\rangle}\,\lambda w\lambda p{:}\ p\in K^{j,w}.f(p)(w)(\ [\![zs\ you\ zhinui]\!]\ )(\ [\![ganjue]\!]\ )(\ [\![speaker]\!]\ ))]\!]\ )$
$= \lambda w\lambda p{:}p\in K^{j,w}.\exists y^p\,[\mathbf{wisdom}\,(y^p\,)(w)\wedge\pi(y^p,\mathbf{zs},w)\wedge\mathbf{wisdom}\,(y_p)](\ [\![ganjue]\!]\ )(\ [\![speaker]\!]\ )$
$= \lambda j\lambda w\lambda p{:}p\in K^{j,w}.\forall w'[w'\text{ is compatible with what }j\text{ feels in }w\rightarrow\exists y^p\,[\mathbf{wisdom}\,(y^p\,)(w')\wedge\pi(y^p,\mathbf{zs},w')\wedge\mathbf{wisdom}\,(y_p)](\ [\![speaker]\!]\ )$

$= \lambda j \lambda w \lambda p{:}p{\in}K^{speaker,w}. \forall w'[w'$ is compatible with what *speaker* feels in $w \rightarrow \exists y^p$
[**wisdom** $(y^p)(w') \wedge \pi(y^p$, **zs**, $w') \wedge$ **wisdom** (y_p)]])

6.2   Predictions and complications

Correct predictions could be made based on the analysis of covert/overt PPTs, which might shed light on degree semantics and the Mandarin *hen* puzzle in general. I argue that *hen* behaves like an obviator in many ways. That explains why the AI gets lifted when the '*you* NP' is modified under *hen* (73) and (74)–the obviation effect. This is in line with Fang (2016) and Fernald (2000). They argue that there is a parallelism between *hen* and English verbs 'appear' 'seem', which are related to speaker's judgment over a situation in an evaluative event, and makes a generalization based on his or her evaluation. Obviator *hen* updates the kernel that is anchored in the speaker, which overwrites the *K* of the subjective '*you* NP'. The directness requirement of the subjective '*you* NP' disappears under *hen*. Modification with obviators will be possible with third-party overt tasters. Following AK (2018), I maintain that *yiding* 'must' is anchored to the speaker while PPT is dependent on the DP's kernel, namely the subject DP, which is also a perceiver/experiencer. Recall that no contradictions are found in (77) and (78).

Fang's analysis extends the proposal of Fernald (2000) about verbs like 'seem'. Fernald (2000) adopts a Carlsonian sorted types, here x is a stage of John, Q is some property of John, G is the generic quantifier, y is a stage realized by z, and z are individuals that are intelligent in general.

(157)   Modified (*by Fang 2016* from Fernald 2000, p. 90)
     a.   John seems to be intelligent.
     b. $\exists Q, x^s$ *perceive'*$(Q(x))\&R(x,j)\&Q(x)\&Gy^s$,z^i $(Q(y)\&R(y,z))$*intelligent'*(z)

It says, there exist some stage-level property Q, and a stage $x^\wedge s$, which refers to the sort of stage objects, such that John is realized as x, and there is a perceiving event of x, such that x having Q, and in general, for any stage y and any individual z such that z realizes as y, if y also has the property Q, then z is regarded as intelligent.

Fang (2016) suggested that *hen* can be analyzed in a similar manner. Here a judge is involved in an event of evaluation, based on his or her knowledge, he or she could determine whether the object being evaluated possess that property denoted by the gradable adjective.
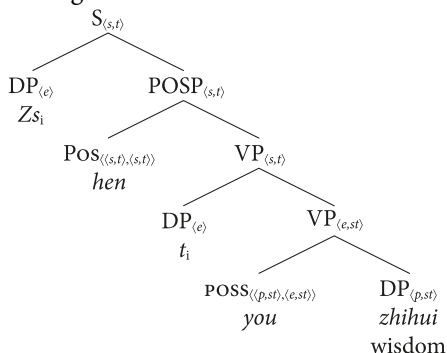
(158)   a.   *Afu hen gao.*
        Afu hen tall
        'Afu is *hen* tall.'
     b. $\exists Q, x^s, v^i R(x, Afu)\&Eval(Q(x))(v)\&Gy^s, z^i$ $(Q(y)\&R(y,z))$*tall'*(z)

It is saying that there is a property Q, a stage $x^{\wedge}s$, and a judge $v^{\wedge}i$, such that the subject Afu is realized as x, and there is an evaluation event in which the judge v evaluates the stage x of Afu as having the property of Q, and for any stage y, individual z, if z is realized as y, and y has the property of Q, then z is tall. Based on that, I propose the semantics of subjective modal *hen* in (160) as below. (161) differs from (158b) in that (161) adds an additional layer of complication to explain the possessive as well as the epistemic features of the '*hen you* NP' structure.

(159)   'Zhangsan is *hen* wise'

```
                        S⟨s,t⟩
                 ┌────────┴────────┐
            DP⟨e⟩              POSP⟨s,t⟩
            Zsᵢ          ┌────────┴────────┐
                    Pos⟨⟨s,t⟩,⟨s,t⟩⟩      VP⟨s,t⟩
                        hen          ┌──────┴──────┐
                                  DP⟨e⟩         VP⟨e,st⟩
                                   tᵢ        ┌────┴────┐
                                      POSS⟨⟨p,st⟩,⟨e,st⟩⟩   DP⟨p,st⟩
                                           you          zhihui
                                                        wisdom
```

(160)   *Zhangsan hen you zhihui.*
        Zhangsan ᴅᴇɢ have wisdom
        Zhangsan is *hen* wise.   (*hen* is of type $\langle st,est\rangle$)

(161)   Denotation
        $\lambda f^{(s,t)} \lambda x \lambda w. \exists Q, x^s \ perceive'(Q(x)) \& R(x,j) \& Q(x) \& Gy^s, z^i (Q(y) \& R(y,z)) \pi'(z, wis\text{-}dom(y^p))^w$

There is an issue that is open to discussion, which may add another layer of complication. It concerns the differences of argument structures within the class of PPTs. For example, while *tasty* takes a DP subject denoting a kind of food, *fun* can take either an event denoting DP subject (*The ride* was fun), or an infinitive clause:

(162)   a.   The cake is tasty.
        b.   *To eat the cake was tasty.

(163)   a.   The ride was fun.
        b.   To ski is fun.

While both *fun* and *tasty* seem to semantically refer to an experience event, they do it in different ways. One possible answer is from Bylinina (2014, 2017), who proposes that the first argument of *fun* denotes a predicate over events rather than the 'stimulus' individual.

7.   Summary and future studies

By combining the idea of possessive PC (FKG 2017) and the kernel-based theory of subjectivity (vFG 2010), this paper proposes an analysis of the otherwise mysterious behavior of the Mandarin '*you* NP', where subjectivity/evidentiality and possessive/attributive readings come and go in an intricate way. The proposed analysis answered how the hypothetical category of PPTs is realized in Mandarin, how judge parameter is encoded semantically, where 'directness'/AI is stored compositionally, and consequently, this paper attested the association of quality nouns and subjectivity.

In this proposal I investigate some issues on the semantics and syntax of subjective predicates. Although the domain of my investigation is far from complete, I hope I have drawn a basic picture that can capture our general intuition of how subjectivity works. Overall this paper explores an expression that is related to subjectivity and firsthand experience. A natural class of taste predicates is identified in Mandarin Chinese, supported by the pre-existed diagnostics in the literature as well as a relatively recent test about acquaintance inference. These in turn strengthen the previous analysis of the mystery *hen* being a subjective modal. My proposed analysis is rooted in literature on information source. I argue that bare PPTs–PPTs without judge PPs (the subjective '*you* NPs') and overt PPTs–PPTs with an overt judge arguments (the subjective '*you* NPs' embedded under the evidential morpheme *dao*) behave differently, but they both comment on evidential grounds for a proposition.

To formalize my claims, I adopt the kernels analysis in vFG (2010), the notion of PC predicates in FKG (2017), and the AI analysis in AK (2018). From the perspective of linguistic variation, this proposal shows that the connection between taste predicates and epistemic modals appears to be universal. Natural languages may differ in the strategies they employ to conceptualize evidence and the extent to which the distinctions of information source and force collapse.

As to future studies, I'm planning to examine a variety of examples which arguably call for a relativist analysis this proposal has been advocating for. I argue that predicates of aesthetic quality, contingent futures, or epistemic modals fall short of the degree of relativism exhibited by PPT. Instead they occupy a kind of middle ground, allowing for objective truth values with no relativization, alongside a relativized assignment of truth values that varies according to perspective. Other examples–involving scalar cut-offs, and *too, enough*–seem like better candidates for a fully relativist analysis, as has been sketched in Lasersohn (2017). The initial indications are that a fully relativist analysis, in which truth values vary by perspective and no unrelativized truth values are assigned, should be limited to sentences dealing with matters of taste or scalarity.

Specifically, one class of examples which appears to be a good candidate for a fully relativistic analysis are *scalar predicates*. By this I mean predicates such as *tall* or *rich*, which in some way relate their arguments to degrees on a scale: John is tall (or rich) to a certain degree, Mary to a different degree, and so on. The semantic effect of scalarity is analogous in some ways to that of sensitivity to personal taste, but also shows some important differences. Many predicates–including our paradigmatic examples of PPT–are both scalar and predicates of taste. Sometimes, scalar expressions appear with a *degree/measure phrase*, as in (164a), where *tall* appears with *six feet*; and sometimes they appear without any degree/measure phrase, as in (164b).

(164)   a.   John is six feet tall.
        b.   John is tall.

The relevant cases for my purposes here will be those with no measure phrase (164b). Even if no definite cut-off point is established, the cut-off is probably constrained contextually. In such a case, disagreements which turn on this difference in where to place the threshold are fully "faultless", much like disagreements which turn on differences in personal taste. What seems crucial for disagreements over taste (involving scalar predicates) is not the location of the cut-off, but the initial assignment of degrees. John and Mary may disagree whether skydiving is fun, not because they both realize it is fun to degree d and differ as to whether d is sufficiently high to count as fun, but because John (who enjoys a good thrill) assigns it a high degree of fun, while Mary (who is terrified of falling) does the opposite. Scalarity and sensitivity to taste thus give rise to different patterns of confidence and hesitation in assessment and assertion, despite both calling for a relativist analysis.

(165)   a.   This food is warm enough.
        b.   This food is too warm.

Another related class of examples which seem to be good candidates for a relativist analysis involve a certain reading of degree words expressing sufficiency or excess, such as *enough* or *too*, as in (165). I leave the fleshed out analysis to a full-length paper to pursue.

Acknowledgements

Abbreviations and gloss conventions used

a.o.	among others
amb	ambiguous; NonAmb: non-ambiguous
1SG	first person singular
1PL	first person plural
2SG	second person singular
3SG	third person singular
ba	*ba*-construction
bei	*bei*-construction
bi	*bi*-construction
COP	copula
ind	indirect (evidential)
j	judge
Lit	literal translation/meaning
MOD	modifier/relativizer
PERF	perfective
EXP.PERF	experiencial perfective
pc	possessive Property Concept
PRT	particle
PST	past tense
NEG	negation
CLF	classifier
POSS	possessive

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Appendix

Distribution table

Distribution of eight frequently occurring possessive Property Concept constructions in BCC Chinese Corpus (Xun et al. 2016, Zhang 2019)

String, gloss	Total count	Overtly modified	Covert POS environment	Simple declarative
you daoli 'have reason'	171	69	79	23
you liliang 'have strength'	23	13	9	1
you paitou 'have style'	4	4	0	0
you jingyan 'have experience'	31	14	14	3
you zhihui 'have wisdom'	10	2	7	1
you caihua 'have talent'	6	4	2	0
you wenhua 'have education'	5	0	5	0
you yongqi 'have courage'	8	0	8	0
totals	258	106 (41%)	124 (48%)	28 (11%)

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