Indexicals as Weak Descriptors

Andy Lücking
Goethe University Frankfurt

Abstract

Indexicals have a couple of uses that are in conflict with the traditional view that they directly refer to indices in the utterance situation. But how do they refer instead? It is argued that indexicals have both an indexical and a descriptive aspect – why they are called *weak descriptors* here. The indexical aspect anchors them in the actual situation of utterance, the weak descriptive aspect singles out the referent. Descriptive uses of "today" are then attributed to calendric coercion which is triggered by qunatificational elements. This account provides a grammatically motivated formal link to descriptive uses. With regard to some uses of "I", a tentative contiguity rule is proposed as the reference rule for the first person pronoun, which is oriented along recent hearer-oriented accounts in philosophy, but finally has to be criticized.

1 Descriptive Indexicals

Indexicals have descriptive uses as exemplified in (1a) (taken from Nunberg, 2004, p. 265):

(1) a. Today is always the biggest party day of the year.

b. *November 1, 2000 is always the biggest party day of the year.

According to Nunberg (2004), *today* in (1a) is interpreted as picking out a day type or day property instead of referring to a concrete day, since "[...] the interpretations of these uses of indexicals are the very things that their linguistic meanings pick out of the context." (p. 272). The full date in (1b), to the contrary, refers to a particular day and has no such type or property reading. The interpretations of both sentences in (1) diverge, even if both sentences are produced on November 1, 2000. Based on these observations (and criticizing his earlier account which rests on distinguishing the index from the referent and bridging between both by means of a salient relation (Nunberg, 1993)) Nunberg (2004) comes up with his *granularization of context hypothesis*: indexical expressions are evaluated in contexts which are "individuated by the conversationally relevant properties" (p. 273). However, the "conversationally relevant properties" seem to be restricted by the linguistic meaning of the indexical in question. For instance, descriptive uses of *today* always rest on a temporal interpretation (combining *today* with atemporal descriptions sound awkward, e.g., "*Today is always $2+2=4$" or "*Today is always the largest tree in the park"). Thus, a more restrictive account should be possible.

Accordingly, contrary to the context granularization account – at least with respect to the kinds of examples in (1) – it is argued in the following, that descriptive interpretations of indexical expressions are functional abstractions over indices that follow from the grammar of descriptive constructions in addition to type raising (Section 2). Part of the argument is that indexicals have a weak descriptive content that allows for functional abstraction in the first place. This re-analysis is spelled out more precisely in Section 3. Contrary to this line, however, in Section 4 it is suggested that 'I', instead of exhibiting descriptive use, should be interpreted according to a addressee-oriented semantic rule resting on a contiguity relation.

2 "Today" and Calendric Coercion

The standard interpretation of descriptive indexicals rests on the two stage process of deferred reference: first, the index is identified and then the referent is found via a salient functional relation it bears to the index (Nunberg, 1993; Elbourne, 2008). Why looking for another analysis? A reason is that descriptive readings can be obtained with exophorically used demonstratives, but not with their endophoric counterparts (cf. Nunberg, 2004, p. 271):

(2) a. [Pointing at Pope Francis] That man is usually Italian.

b. *I met Pope Francis yesterday. That man is usually Italian.

The problem then is, why the salient relation bound up with the index is functional in one case, but non-functional in the other.

Further evidence for this mismatch can be found when comparing descriptive uses of indexicals to E-type pronouns (Dowty, 1981), respectively and more specifically, the "paycheck" readings of implicit arguments as analysed by Pedersen (2011).[1] The "paycheck" pronoun in (3a) (bold face, my emphasis – both sentences in (3) are taken from Pedersen (2011, p. 159), where (3a) is a variant of the original sentence provided by Dowty (1981).) receives a functional reading on top of an anaphoric one to the effect that *it* refers to the paycheck of the foolish man instead to that of the wise man (the simple anaphoric interpretation).

(3) a. The wise man gave his paycheck to his wife. The foolish man gave **it** to his mistress.

b. Every good father visits his daughter on her birthday. Bill's a deadbeat dad, so he only calls __.

The pronoun is analysed as an E-type pronoun in that it picks up a "paycheck-of" function from the preceding co-text and applies it to the variable index of its antecedent expression (*foolish man*, in this case). Accordingly, such E-type readings can be modelled as NP-deletion (Elbourne, 2001), giving rise to a formal link. Also implicit arguments can "hide" paycheck pronouns, as illustrated in (4b). The elliptic constituent, indicated by '__', when explicated spells out as "**his** daughter" and contains a paycheck possessive.

Implicit arguments bear the risk of overgeneralization, as has been argued by Heim (1990, p. 165). E-type accounts need to distinguish between (4a), which allows an E-type reading of *her*, from (4a), which, although conveying the same information, only allows a referential interpretation of *her*:

(4) a. Every man who has a wife is sitting next to her.

b. ?Every married man is sitting next to her.

Seen from the perspective of E-type pronouns, some challenges imposed specifically by descriptive uses of indexicals can be highlighted.

1. Descriptive indexicals lack a linguistic co-text from which a descriptive conditions can be taken. The running example of *today* given in (1a) is a case in point as is the demonstrative in (2a).

2. Even if their is a linguistic co-text, descriptive indexicals involve a deferred component that goes beyond the description taken from co-text. Consider (2) from above. The antecedent expression is a proper name, but what is required in order to account for the interpretation in question is a transition from the namebearer to its office or periods of papal reign. For such reasons, formal links like NP-deletion are not sufficient but deferred reference analyses are employed that draw on salient relations that are at their disposal just as required (see e.g. Elbourne, 2008).

[1] Accounting for descriptive indexicals in terms of a paycheck analysis is due to a suggestion of an anonymous reviewer.

3. A deferred reference analysis as sketched in the preceding bullet point surely accounts for descriptive indexicals. But then it has to face the non-transferrability of the deferring salient relation to discourse deixis, as exemplified in (2).

It seems that there lures an impasse in any modeling choice we can take along the E-type lines, in addition to a lack of explanation for the salient deferring relations just being there on demand.[2] However, the phenomenon of descriptive indexicals seem to be describable in more detailed terms.

First of all, more linguistic features that seem to be involved in licensing descriptive uses of indexicals can be identified. The descriptive interpretation in (4a) cannot simply be reduced to a certain *use* of the indexical: it is triggered by applying an adverbial quantifier (A-quantifier) to the indexical in the first place (Kijania-Placek, 2015). This is evidenced by the fact that no descriptive interpretation is available when the A-quantifier is absent (which also results in a specific interpretation of the definite):

(5) a. Today is the biggest party day of the year.

b. November 1, 2000 is the biggest party day of the year.

The same diagnosis applies to further examples which are discussed in this context, like those in (6). Again, the descriptive reading is linked to an A-quantifier – if the A-quantifier is absent, only a referential interpretation is available.

(6) a. [*Pointing at the pope*] He is (usually) Italian.

b. [*Watching Bayern against BVB*] This football match is (commonly) exciting.

When an A-quantifier is present, the meaning of the indexical is shifted from a referent to, for instance, its office (6b) or kind (6c).

Other quantifying contexts also give rise to descriptive readings:[3]

(7) a. Today is may favourite day.

b. Over the years, most couples request today as their marrying day.

(The quantifying aspect of adjective *favourite* may reside in introducing a comparison set.) Thus, it seems to be promising to ascribe the source for a shifted interpretation of descriptive indexicals to some sort of quantification.

Note further that the classic examples for descriptive readings of indexical expressions involve a form of the lexeme *be* followed by a predicational noun phrase (an exception being the more laborious construction in (7), though). As testified in (8), descriptive interpretations become unavailable when predicational constructions are replaced by regular verb phrases.[4]

(8) a. He usually visits an Italian.

b. This match commonly excites people.

In (8a), some custom behavior is ascribed to a referent. In a similar manner, a certain match is said to have a broad impact in (8b).[5]

Thus, the phenomenon of descriptive indexicals usually is invoked by

- predication over an indexical subject, where

[2]Note that the nature of the formal link between linguistic co-text and anaphoric indirect arguments is also recognized by Pedersen (2011) as one of the crucial challenges of any approach resting on additional, contextual functions.

[3]This observation and respective examples are contributed by the anonymous reviewers.

[4]Interestingly, as noted by an anonymous reviewer, this grammatical change is bound up with a switching from an individual-level to a stage-level predicate. This observation might shed some light on the sensitivity of descriptive indexicals to quantificational contexts.

[5]Many if not all demonstrative noun phrases have kind reading, anyway (Umbach and Gust, 2014), so that (8b) is ambiguous.

- the grammatical realization of the predication involves a *be* equation, and
- the predication is quantified.

In generalized quantifier theory, A-quantifiers can be interpreted in terms of determiner quantifiers (D-quantifiers; see e.g. Keenan, 2011). For instance, *always* corresponds to the universal quantifier *all*, which expresses a subset relation between sets X and Y, such that $\mathbf{all}(X)(Y)$ is true just in case $X \subseteq Y$. However, since *today* is an indexical expression, it does not give rise to a set denotation as required in (8). Using a contextual relation f as in works on deferred reference, the indexical can be type-raised by abstracting over the index.[6] The sentence in (1a) can now be roughly represented as follows:

(9) $\lambda f_{\langle e,e\rangle}[\{y : f(y) \wedge \mathbf{today}(y)\} \subseteq \{\mathbf{biggest\text{-}party\text{-}day\text{-}of\text{-}year}(y)\}]$

The idea of the semantic representation in (9) is to request a function f that maps its variable y onto years. The indexical *today* is then applied to this year.

The type mismatch arising due to quantificational co-texts seem to provide a suitable explanations for applying a re-interpretation of indexicals. In the following, a coercion model for such an operation is sketched. The strategy is as follows:

- The indexical picks out an individual but is descriptively underspecific (that is, the referent is not (only) singled out by descriptive means).
- The descriptive underspecificity allows for a contextual abstraction over the referent, where the dimension of abstraction is determined by the quantifier.

The framework for providing a more precise spell-out is the dialogue theory *KoS* (Ginzburg, 2012) implemented in *Type Theory with Records* (Cooper, 2012; Cooper and Ginzburg, 2015). KoS provides an interface to context, which is required for situated language means like indexicals.

3 Abstraction over Contextual Parameters

The meaning of "today" is represented in (10), following the architecture of a sign defined in Cooper and Ginzburg (2015). Signs interface with contextual parameters by being dialog game board-aware. For instance, *today* refers to the utterance context parameter *utt-time* and returns the corresponding day. In this way, both the indexical (utterance-time sensitive) and the descriptive (*toDAY*) aspect of "today" are captured.

(10)
$$\begin{bmatrix} \text{dgb} : \begin{bmatrix} \text{spkr} & : \textit{Ind} \\ \text{addr} & : \textit{Ind} \\ \text{utt-time=s-event.s-time} & : \textit{Time} \\ \text{c-utt} & : \text{addressing(spkr,addr,utt-time)} \end{bmatrix} \\ \text{s-event} : \begin{bmatrix} \text{phon} & : \text{today} \\ \text{s-time} & : \textit{Time} \end{bmatrix} \\ \text{synsem} : \begin{bmatrix} \text{cat} = \text{N} : \textit{PoS} \\ \text{cont} : \begin{bmatrix} \text{t} & : \textit{Time} \\ \text{c-day} & : \text{day(t,dgb.utt-time)} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

In TTR, generalized quantifiers (*Quant*) are of the type of functions from properties (*Ppty*) to record types, where a property is a function from individuals to record types (Cooper, 2013).[7] Hence, "always" cannot apply to "today", since the latter provides an object of basic type *Time* instead of a property.

[6] Using an E-type relational instead of a property abstraction is to be credited to remarks by an anonymous reviewer.

[7] Note that properties defined in this way also cover functions of type $\langle e,e\rangle$ as used above.

However, days underlie a "circle of return": every year has a November 1. Hence, years provide a basis for quantification. It is made available by abstracting away from the indexically given day by means of a function that shifts the context from days to years, call it **calendric coercion**:

(11) $$\left[\text{calcoerc} = (\text{r} : \left[\begin{array}{ll}\text{t} & : \textit{Time}\\ \text{c-day} & : \text{day(t,dgb-params.utt-time)}\end{array}\right])\left[\begin{array}{ll}\text{y} & : \textit{Time}\\ \text{c-year} & : \text{year(y,r.t)}\end{array}\right] : (\textit{Rec})\textit{RecType}\right]$$

By means of calendric coercion the sentence "Today is always the biggest party day of the year" translates to a general quantifier as in (12) (for details, see Cooper (2013)):

(12) $$\left[\begin{array}{l}\text{q-params} : \left[\begin{array}{ll}\text{restr=calcoerc} & : \textit{Ppty}\\ \text{wit} & : \text{always}^{\dagger}\text{(restr)}\end{array}\right]\\ \text{cont} = \left[\begin{array}{ll}\text{scope=big-party-day} & : \textit{Ppty}\\ \text{c}_{\text{always}}\text{=}\Uparrow\text{q-params.wit} & : \text{always}(\Uparrow\text{dgb-params.restr, scope})\end{array}\right] : \textit{Quant}\end{array}\right]$$

The difference between the indexical "today" and a fully resolved calendric expression like "November 1, 2000" is, that the descriptive content of the latter, but not the former, fixes the temporal range from days, over months to years. From this it follows that a partly resolved date expression as in (13) should also allow for calendric coercion, which seems to be correct:

(13) November 1 is always the biggest day of the year.

Turning to another widespread example in this context, namely "I am traditionally allowed to have a last supper". Contrary to the orthodox analysis, it can be argued that actually no descriptive indexical is involved here. This can be seen when the target sentence is contrasted to minimal pair variations:

(14) a. I am traditionally allowed to have a last supper. $\rightsquigarrow$ *I, as condemned to death, am traditionally allowed to have a last supper.*

b. I am allowed to have a last supper. $\rightsquigarrow$ *I, as condemned to death, am allowed to have a last supper.*

c. Peter is traditionally allowed to have a last supper. $\rightsquigarrow$ *Peter, as condemned to death, am traditionally allowed to have a last supper.*

d. Peter is allowed to have a last supper. $\rightsquigarrow$ *Peter, as condemned to death, am allowed to have a last supper.*

e. I am allowed to take the bus. $\rightsquigarrow$ *I, as buyer of a ticket, are allowed to take the bus.*

f. I am legally allowed to take the bus. $\rightsquigarrow$ *I, as buyer of a ticket, are legally allowed to take the bus.*

The systematicity that becomes visible in the examples in (14) suggest that the adverb *traditionally* introduces a social norm according to which the statements are to be judged. In particular, the alleged descriptive readings are independent of indexicals. It is the verb *allow* that introduces a role for the reason of allowance. So, nothing special here, except the need to spell out an appropriate semantics of *traditionally*.

4 Descriptive "I"?

The first person pronoun nonetheless gives rise to *non-speaker referential uses* (King, 2001), as illustrated in Figure 1, due to Kratzer (1978) and Köpping (2017). "I" and "me" in Figure 1 simply pick out the truck and the person carrying the note, respectively. In particular, they do not refer to the speakers, or

more generally: the authors, of the tokens, as traditionally assumed ("the referent of 'I' is the speaker of 'I'"). The interpretation of the first person pronoun in the examples is determined by the circumstance of evaluation, not by that of the tokening (Smith, 1989). The referent, however, may still be regarded as the "agent" of the utterance, though the notion of agency is somewhat loose (cf. Kratzer, 1978).

Figure 1: Non-speaker referential uses of the first person pronoun.

A deferred reference interpretation (cf. the respective remarks in Section 2) is possible but fails to account for the straightforward referential type of "I". This is revealed by putting the reprise fragment containing the pronoun to the clarification test (Purver and Ginzburg, 2004). Suppose two people, A and B, are watching the truck passing by. Then one of them might ask for the content of "I" by means of a reprise fragment.

(15) A: *I*? / Who's *I*?
B: The truck, of course.

B's answer in (15) provides evidence for the pronoun referring to the truck without detouring to some metonymic relation. Otherwise B's answer would have to be something like *The guy who wrote the poster* or *The guy who wrote the poster intended it to refer to the truck*.

Such examples can be *described* within a narrow context theory providing a set of indices: the truck instead of token author fills the author slot (Kaplan, 1989; Cohen and Michaelson, 2013). However, comparable to the problem of the link of paycheck interpretations, such an approach does not rule out the token author interpretation, which are not available in such cases.

Remark: the examples involve written inscriptions which are detached from time and place of their production, anyway. Given that written and spoken language are two quite different modes, it may be necessary to distinguish a written and a spoken *I* (likewise for other indexicals). We refrain from follow this line further here, however, noting that things are of course complex: Consider a transporter with a loudspeaker driving through town and the driver advertising via the speakers "I am for rent". Even in this case, the transporter, not the driver, will be taken to the subject of the sentence and thus the referent of the indexical.

The divergence of speaker/author and the meaning of "I" is prominent in literary works. An example is given in (16):

(16) HAMLET: I prithee do not mock me.

The "I" in (16) does not refer to its author (that would be Shakespeare), but to Hamlet, who is indicated to be the "speaker" by means of screenplay typography. Note that the sentence in (16) does not seem to be an instance of quotation: it is Hamlet *speaking*. Compare this to a speaker's act of speaking in a spoken conversation, where the utterance is also not related to its speaker by quotation, but by a causal relation.

Based on these and related considerations, it has been proposed to spell out the semantic rule that fixes the reference of 'I' in terms of the audience, that is, a hearer-oriented construal (Romdenh-Romluc,

2006): “what a speaker can refer to with an indexical utterance is constrained by what an audience can understand” (op. cit., p. 280/1). The loose examples provided here, in particular trying to unify written and spoken data, suggest to spell out an audience-fixing rule in terms of a contiguity relation (holding at the time of perception) between the utterance token (written or spoken) and an entity (the agent). A tentative lexical entry for ‘I’ is given in (17):

(17)
$$\begin{bmatrix} \text{dgb} : \begin{bmatrix} \text{ag} & : \textit{Ind} \\ \text{utt-time=s-event.s-time} & : \textit{Time} \\ \text{utt-loc} & : \textit{Loc} \\ \text{c-ctg} & : \text{contiguous(ag,s-event,utt-loc)} \end{bmatrix} \\ \text{s-event} : \begin{bmatrix} \text{phon} & : \text{I} \\ \text{s-time} & : \textit{Time} \end{bmatrix} \\ \text{synsem} : \begin{bmatrix} \text{cat=Pron} & : \textit{PoS} \\ \text{cont} & : \left[\text{i=dgb.ag} : \textit{Ind}\right] \end{bmatrix} \end{bmatrix}$$

The structure in (17) requires that there is an individual (value of ‘ag’) which stands in a contiguity relation to the utterance token of “I” (indicated by the ‘s-event’ being an argument of the contiguity relation ‘c-ctg’). The semantic contribution ‘cont’ of the first person pronoun is referential: it is the individual found at label ‘ag’. As a matter of fact, the contiguity relation in most cases just picks out the “classical speaker” (“ag=spkr”). After all, lip movements and their role in the causal relationship to perceptible speech sounds in spoken conversation provide good evidence for the respective contiguity relation (cf. e.g. Kubovy and Schutz, 2010).

5 Conclusion

It has been argued that the challenge of fixing the reference of descriptive “today” can be solved by means of an operation called calendric coercion. The re-interpretation of indexicals is triggered by type mismatches induced in quantificational contexts. Thus, the model sketched here only makes use of familiar coercion operations and exploits a grammar-utterance situation interface of situated communication.

Furthermore, following audience-oriented semantic accounts to the first person pronoun from philosophy of language, a contiguity rule for “I” has been proposed, which allows for a semantic description of cases that often have been explained in terms of a metonymic process. However, there seem to at least two problems with a philosophical account like the one sketched above. Searching for a generalized semantic rule that covers all uses, in particular the descriptive ones, reduces the reference fixing content of indexicals to very broad notions (like “contiguity”, as suggested above). These notion in turn require explanations themselves. Secondly, even the contiguity rule falls short in cases where a truck carries a note like “Marry me!”, which obviously does not refer to the truck. Resorting to different ways of context-dependence of indexicals seems to be more adequate.

References

Cohen, J. and E. Michaelson (2013). Indexicality and the answering machine paradox. *Philosophy Compass 8*(6), 580–592.

Cooper, R. (2012). Type theory and semantics in flux. In R. Kempson, T. Fernando, and N. Asher (Eds.), *Philosophy of Linguistics*, Volume 14 of *Handbook of Philosophy of Science*, pp. 271–323. Oxford and Amsterdam: Elsevier.

Cooper, R. (2013). Clarification and generalized quantifiers. *Dialogue & Discourse 4*(1), 1–25.

Cooper, R. and J. Ginzburg (2015). Type theory with records for natural language semantics. In S. Lappin and C. Fox (Eds.), *The Handbook of Contemporary Semantic Theory* (2 ed.)., Chapter 12, pp. 375–407. Oxford, UK: Wiley-Blackwell.

Dowty, D. R. (1981). Quantification and the lexicon: a reply to Fodor and Fodor. In M. Moortgat, H. van der Hulst, and T. Hoekstra (Eds.), *The Scope of Lexical Rules*, Linguistic Models, pp. 79–106. Dordrecht and Cinnaminson: FORIS Publications.

Elbourne, P. (2001). E-type anaphora as NP-deletion. *Natural Language Semantics 9*(3), 241–288.

Elbourne, P. (2008). Demonstratives as individual concepts. *Linguistics and Philosophy 31*(4), 409–466.

Ginzburg, J. (2012). *The Interactive Stance: Meaning for Conversation*. Oxford, UK: Oxford University Press.

Heim, I. (1990). E-type pronouns and donkey anaphora. *Linguistics and Philosophy 13*, 137–177.

Kaplan, D. (1989). Demonstratives. In J. Almog, J. Perry, and H. Wettstein (Eds.), *Themes from Kaplan*, pp. 481–563. New York and Oxford: Oxford University Press.

Keenan, E. (2011). Quantifiers. In C. Maienborn, K. von Heusinger, and P. Portner (Eds.), *Semantics: an International Handbook of Natural Language Meaning*, Volume 2 of *Handbücher zur Sprach- und Kommunikationswissenschaft*, Chapter 43, pp. 1058–1087. De Gruyter Mouton.

Kijania-Placek, K. (2015). Descriptive indexicals, propositional attitudes and the double role of context. In *Modeling and Using Context: Proceedings of the 9th International and Interdisciplinary Conference*, CONTEXT 2015, pp. 287–301.

King, J. C. (2001). *Complex Demonstratives: A Quantificational Account*, Volume 2 of *Contemporary Philosophical Monographs*. Cambridge, MA: MIT Press.

Köpping, J. (2017). On individuating contexts (and indices). Logisch-semantisches Kolloquium, Thomas Ede Zimmermann, Goethe-Universität Frankfurt.

Kratzer, A. (1978). *Semantik der Rede: Kontexttheorie, Modalwörter, Konditionalsätze*. Monographien: Linguistik und Kommunikationswissenschaft. Königstein/Ts.: Scriptor.

Kubovy, M. and M. Schutz (2010). Audio-visual objects. *Review of Philosophy and Psychology 1*(1), 41–61.

Nunberg, G. (1993). Indexicality and deixis. *Linguistics and Philosophy 16*(1), 1–43.

Nunberg, G. (2004). Descriptive indexicals and indexical descriptions. In M. Reimer and A. Bezuidenhout (Eds.), *Descriptions and Beyond*, Chapter 6, pp. 261–279. Oxford: Clarendon Press.

Pedersen, W. (2011). Implicit arguments, paychecks and variable-free semantics. *Semantics and Linguistic Theory 21*, 155–175.

Purver, M. and J. Ginzburg (2004). Clarifying noun phrase semantics. *Journal of Semantics 21*(3), 283–339.

Romdenh-Romluc, K. (2006). 'I'. *Philosophical Studies 128*(2), 257–283.

Smith, Q. (1989). The multiple uses of indexicals. *Synthese 78*(2), 167–191.

Umbach, C. and H. Gust (2014). Similarity demonstratives. *Lingua 149*, 74–93. SI: Modification at the Interfaces.