



Intuitions on Semantic Reference

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Abstract

Since Machery et al. *Cognition* 92, B1-B12 (2004) attacked Kripke's refutation of classical descriptivism, their experiment has been repeated several times, in its original version or in some revised ones, by theorists with contrasting intents. Some repeated the experiment for confirming its results, others for proving them unreliable. One striking characteristic of those surveys is that they mostly replicated the data collected in Machery et al.'s *Cognition* 92, B1-B12, 2004 experiment: less than 60% of Westerners showed preference for the causal-historical response. We side with the critics of Machery et al.'s experiment. In this paper, we present the results of a survey that tests some hypotheses for explaining that percentage of Westerners' preferences without taking it as evidence that more than 40% of Westerners have descriptivist intuitions on semantic reference. The aim of our paper is not merely to question the reliability of Machery et al.'s experiment. In sections 4 and 5 we assess the impact of our survey on the current debate in experimental semantics. We provide a novel account of the nature of the epistemic ambiguity that affects experiments in theory of reference and explain the consequences that our account of the epistemic ambiguity has for subsequent works trying to avoid ambiguities.

1 Introduction

Seventeen years ago, Machery et al. (2004) launched their provocative attack on the methodology in theory of reference. They claimed that the methodology in theory of reference is unsound because intuitions on semantic reference vary across and within different cultures. They tested laypeople's intuitions in hypothetical cases modelled after Kripke's Gödel/Schmidt scenario in which a person, Schmidt, proved the

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incompleteness of arithmetic, and Gödel stole the proof and claimed credit for it. Machery et al. asked participants whether a person, John, who has been told that Gödel proved the incompleteness of arithmetic, would, using the name “Gödel”, be speaking of the person who proved the incompleteness of arithmetic or the person who stole the proof. Here is the probe question in Machery et al.’s experiment:

When John uses the name “Gödel”, is he talking about (A) the person who really discovered the incompleteness of arithmetic or (B) the person who got hold of the manuscript and claimed credit for it? (Machery et al. 2004: B6).

Answer (A) is taken to be expression of referential intuitions that support (classical) descriptivism. Descriptivism is the view that the referent of a name is determined by the description(s) that speakers associate with the name. Since John associates the description “the person who really discovered the incompleteness of arithmetic” with the name “Gödel”, participants who choose answer (A) are regarded to express the intuition that the name “Gödel” in John’s idiolect semantically refers to the satisfier of the description “the person who really discovered the incompleteness of arithmetic”, i.e. Schmidt. Answer (B) is taken to be expression of referential intuitions that accord with causal-historical theories, according to which the information that speakers associate with names plays no satisfactorial role in the determination of their semantic referents.

Machery et al. found out that less than 60% of Westerners and only about 30% of Easterners answered (B).¹ If one accepts that the standard methodology in theory of reference exploits the method of cases,² which appeals to the evidential role of intuitions, then the results of Machery et al.’s experiment put the theory of reference in trouble. In particular, the argument against descriptivism grounded on the claim that people have the intuition that in the above scenario the speaker refers to Gödel, which many attribute to Kripke (1980: 83–4), is undermined. For intuitions can be reliable evidence for a theory only if they do not differ systematically across different groups of people.

Since the publication of Machery et al.’s survey, their experiment, in its original version or in some revised ones, has been repeated several times by authors with differing intents. Some have repeated the original experiment with the intent to prove that it is mistaken, others with the intent to corroborate and defend it from objections. Just to mention a few works: Machery et al. (2009) repeated the experiment in a clarified version together with a survey on truth-value judgments in order to rebut the objection (Marti 2009; Devitt 2011, 2012; Devitt and Porot 2018) that experimentalists ought to test how people use proper names and not what they think about reference. Machery, Olivola, and de Blanc argued that testing truth-value judgements is a way of testing how people use names. Domaneschi and Vignolo (2018) repeated the original experiment within a larger survey intended to show that truth-value judgements are not reliable indicators of how people are disposed to use names. Sytsma and Livengood

¹ See Machery and Stich (2012: 501) for a chart presenting the data of Machery et al.’s 2004 experiment.

² With respect to the theory of reference, the method of cases can be formulated as follows: the correct philosophical theory of reference for a name N is the theory that is best supported by the intuitions that competent speakers have about N’s reference.

(2011) repeated the original experiment in order to prove that (with respect to Westerners only) it is affected by an ambiguity concerning the epistemic perspectives from which participants understand the probe question (It is worth noting that in Sytsma and Livengood's repetition of the experiment only about 40% of participants chose answer (B)). Sytsma et al. (2015) repeated the original experiment to show that Japanese's responses are not affected by the ambiguity that affected Westerners' responses in Sytsma and Livengood's 2011 experiment. Machery et al. (2015) repeated the original experiment within a larger experiment intended to show that the original experiment is not affected by the speaker's reference/semantic reference ambiguity. Islam and Baggio (2020) repeated the experiment to restate the objection that Machery et al.'s experiment is affected by the speaker's reference/semantic reference ambiguity.

One striking characteristic of those surveys is that they mostly replicated the data that Machery et al. collected in their 2004 experiment: less than 60% of Westerners showed preference for the causal-historical response. Of course, for those who accept the reliability of the experiment, the explanation is straightforward: less than 60% of Westerners have causal-historical intuitions on semantic reference. For those who are critics of the experiment, either because they deny that the methodology in theory of reference rests upon the method of cases (Deutsch 2010; Domaneschi and Vignolo 2020), or because they believe that the experiment is vitiated by some defects and does not test genuine intuitions on semantic reference (Ludwig 2007; Deutsch 2009; Sytsma and Livengood 2011; Domaneschi et al. 2017; Heck Jr. 2018; Islam and Baggio 2020), the fact that less than 60% of Westerners choose the causal-historical response calls for an explanation.

We side in the camp of the critics of Machery et al.'s experiment. We argue that the (alleged) descriptivist response is not the result of descriptivist intuitions on semantic reference. We agree with those authors who maintain that Machery et al.'s experiment does not test genuine intuitions on semantic reference.

In sections 2 and 3 we present the results of an experiment we conducted in order to test some hypotheses on what drives participants when they choose the (alleged) descriptivist response in Machery et al.'s test. The first part of our experiment repeated Machery et al.'s experiment. The data we collected in the first part of our experiment replicate the data of Machery et al.'s experiment. Then we continued the experiment only with the participants who chose the (alleged) descriptivist response (answer A) in order to test whether that response is really expression of descriptivist intuitions on semantic reference. The results of our experiment support the hypothesis that the choice of the (alleged) descriptivist response is not expression of descriptivist intuitions on semantic reference but is either the consequence of an understanding of the probe question that depends on the epistemic perspective from which participants read the definite descriptions "the person who really discovered incompleteness of arithmetic" or the consequence of an understanding and a way of performing the question task that involve attributive uses of the name "Gödel".

After explaining our survey and presenting its results, in sections 4 and 5 we make some reflections on its impact on the current debate about experiments in theory of reference. In particular, we argue that a large part of that debate rests on a mistake. Many commentators raised the objection that Machery et al.'s experiment conflates intuitions on semantic reference and intuitions on speaker's reference. Machery and colleagues replied that this objection is unfounded. We agree with Machery and

colleagues, but we argue that the reason why the semantic/speaker's reference objection is unfounded is very different from what they think.

2 The Experiment

Our experiment aims at assessing whether the (alleged) descriptivist response in Machery et al.'s experiment is expression of descriptivist intuitions on semantic reference. The experiment is designed with a selective sequence of selection. The first question repeated Machery et al.'s test.

QUESTION 1

Suppose that John has learned in college that Gödel is the man who proved an important mathematical theorem, called the incompleteness of arithmetic. John is quite good at mathematics and he can give an accurate statement of the incompleteness of arithmetic, which he attributes to Gödel as the discoverer. But this is the only thing that he has heard about Gödel. Now suppose that Gödel was not the author of this theorem. A man called "Schmidt", whose body was found in Vienna under mysterious circumstances many years ago, actually did the work in question. His friend Gödel somehow got hold of the manuscript and claimed credit for the work, which was thereafter attributed to Gödel. Thus, he has been known as the man who proved the incompleteness of arithmetic. Most people who have heard the name "Gödel" are like John; the claim that Gödel discovered the incompleteness of arithmetic is the only thing they have ever heard about Gödel. When John uses the name "Gödel", is he talking about:

- (A) the person who really discovered the incompleteness of arithmetic? or
- (B) the person who got hold of the manuscript and claimed credit for the work?

The experiment continued only for those subjects who chose answer (A), i.e. the answer that Machery et al. took to be expression of descriptivist intuitions on semantic reference. We tested the hypothesis that the participants who answered (A) did so not because they have descriptivist intuitions on semantic reference, but because they read the definite description 'the person who really discovered the incompleteness of arithmetic' from John's epistemic perspective. We thought that the probe question is affected by the ambiguity that Sytsma and Livengood (2011) called *the epistemic perspective ambiguity*. The definite description "the person who really discovered the incompleteness of arithmetic" can be read from the epistemic perspective of the narrator or from the epistemic perspective of John. From the epistemic perspective of the narrator, Schmidt is the satisfier of the description. From the epistemic perspective of John, instead, Gödel is the satisfier. John believes that Gödel is the person who really discovered the incompleteness of arithmetic. Thus, with respect to what John believes, Gödel is the satisfier of the description "the person who really discovered the incompleteness of arithmetic". If participants read the description in (A) from John's epistemic perspective, they associate it with Gödel, and their choice is not the expression of a descriptivist intuition on semantic reference. In section 4 we cast new light on the

epistemic ambiguity. We argue that the real nature of the epistemic ambiguity has been underestimated even by Sytsma and Livengood, who first introduced it.

In order to test whether participants read the description “the person who really discovered the incompleteness of arithmetic” from John’s epistemic perspective, we asked the following question to the participants who chose answer (A) in Question 1:

QUESTION 2 (FOR THOSE WHO ANSWERED A TO Q1)

When you chose the answer “the person who really discovered the incompleteness of arithmetic”, did you mean “the person John believes to have really discovered the incompleteness of arithmetic”?

(C) Yes

(D) No

If a participant answers (C), that is evidence that the participant reads the definite description “the person who really discovered the incompleteness of arithmetic” from John’s epistemic perspective. Therefore, the participant’s answer (A) in Question 1 cannot be taken as expression of a descriptivist intuition on semantic reference. Of course, this result does not mean that that answer can be taken as evidence against descriptivism. But this is not relevant to our aim. We are not interested in testing theories of reference, but in showing that Machery et al.’s original experiment is not a reliable test of intuitions on semantic reference. Needless to say, a high percentage of answers (C) would threaten the reliability of Machery et al.’s original findings.

Since the answers (A) in Question 1 of the participants who choose answer (C) in Question 2 cannot count as evidence for descriptivist intuitions on semantic reference, we continued the experiment only with the participants who chose answer (D). We intended to test whether the answers (A) in Question 1 of the participants who answer (D) in Question 2 can be taken as expression of descriptivist intuitions on semantic reference. If participants choose answer (D), that is evidence that they do not read the description “the person who really discovered the incompleteness of arithmetic” from John’s epistemic perspective. Yet, we believe that there is still no evidence that those participants have descriptivist intuitions on semantic reference. There is no evidence that the participants who choose answer (A) and answer (D) do so because they believe that John uses the name “Gödel” to refer semantically to Schmidt. We made an alternative hypothesis about what might drive the participants, who do not read the definite description from John’s epistemic perspective, to choose answer (A). We continued our experiment only with those participants for testing our hypothesis. Here is our hypothesis.

In many experiments participants are not experts in philosophy of language with specific attitude to theorizing about metalinguistic concepts like reference and aboutness. As some commentators pointed out (Heck Jr. 2018; Domaneschi and Vignolo 2020), it is plausible that the way laypeople perform the task in Machery et al.’s test is not by reflecting and theorizing on reference and aboutness, but by imagining John uttering a sentence with the name “Gödel” and figuring out the content of what John is saying.

We hypothesise that when the participant is asked to tell whom John is talking about, when John uses the name “Gödel”, the way the participant figures out the task to be performed and tries to respond to it is by imagining John making an utterance of a sentence containing the name “Gödel” and working out the content of John’s utterance. We borrow an idea that Heck (Heck Jr. 2018: 257) marginally entertains but does not develop. Heck envisages the possibility that the participant imagines that John makes an attributive use of the name “Gödel”. Attributive uses of names are a pragmatic phenomenon that Kripke discusses in footnote 36 of *Naming and Necessity*. Kripke acknowledges that there might be cases in which a speaker utters a name to speak of whoever satisfies a certain description. For example, while examining the proof of the incompleteness of arithmetic, one might utter the sentence “Gödel relied on a diagonal argument in this step of the proof” to say that whoever proved the incompleteness of arithmetic relied on a diagonal argument in that step of the proof. Or while reading a passage of the *Metaphysics*, one might utter the sentences “What did Aristotle have in mind here?” wondering what the author of the *Metaphysics*, whoever he/she was, had in mind when he/she wrote that passage. Kripke says that, in analogy to Donnellan’s (1966) usage for definite descriptions, these uses might be called ‘attributive’ uses of names. Kripke argues that, in analogy to his treatment of referential uses of definite descriptions, attributive uses can be accounted for in terms of pragmatics without introducing semantic ambiguities for names.

Attributive uses of names are indeed a delicate matter. Kripke discusses only a couple of examples and never mentions attributive uses in his paper *Speaker’s reference and semantic reference*. Other philosophers (Devitt 1981, 2011) seem to tie the phenomenon of attributive uses to names of authors in the field of literature only. Nonetheless, a plausible conjecture (Heck Jr. 2018) is that attributive uses of names can arise whenever the information, no matter whether true or false, that a certain person performed a certain act is widespread across the community of the users of the name of that person. In such a circumstance, a speaker might use the name not with the semantic intention of referring to its conventional bearer, its semantic referent, but with the pragmatic intention of suspending its conventional meaning and designating whoever performed the act that is commonly attributed to the semantic bearer of the name. The expressive or communicative intention of the speaker is to state a connection between the authorship of the act and some other property by suspending the convention that ties the name to its semantic referent. Notice that participants in Machery et al.’s experiment are told in the vignette that the only information that John associates with the name “Gödel” is that Gödel was the author of the incompleteness of arithmetic, that such information is widespread across the users of the name “Gödel”, and that John has full mastery of the incompleteness theorem. Thus, it is not unlikely that participants imagine John reflecting on the theorem and expressing or conveying the content that whoever is the author of such an outstanding theorem exemplifies a certain property. Think for example of the property of being a mathematical genius. And it is not unlikely that participants imagine that to that end John suspends the conventional meaning of “Gödel” and makes a pragmatic use of it, an attributive use, for expressing or conveying the content that, say, the author of the incompleteness of arithmetic,

whoever he/she is, is a mathematical genius.³ Under this hypothesis, the choice of the answer (A) is not the result of a descriptivist intuition in response to the question on what is the semantic referent of the name “Gödel” when John uses it. Quite the contrary, participants understand the probe question as if it asked something about the nature of the content that John intends to pragmatically express or convey in the context of utterance that they are imagining.

In order to test our hypothesis that answer (A) in Question 1 on behalf of the participants who chose answer (D) in Question 2 is the consequence of an understanding of the probe question that involves attributive uses of the name “Gödel” and not the expression of a descriptivist intuition on semantic reference, we asked two more questions (only to the participants who, after choosing answer (A) in Question 1, chose answer (D) in Question 2). The first question is meant to test how participants understand John’s utterances of the name “Gödel”. It asks participants to tell whether they would agree with John or not, if John said “Gödel is a mathematical genius”:

QUESTION 3 (FOR THOSE WHO ANSWERED A TO Q1 AND D TO Q2)

If John said “Gödel is a mathematical genius”, would you agree with him?

(E) Yes

(F) No

Then, working only with the participants who chose answer (E), we asked the last question. It asks participants to report how they understood the content of John’s utterance:

QUESTION 4 (FOR THOSE WHO ANSWERED A TO Q1, D TO Q2, AND E TO Q3)

Did you understand John saying that:

(G) Whoever proved the incompleteness of arithmetic is a mathematical genius.

(H) Schmidt is a mathematical genius.

(I) Gödel is a mathematical genius.

In order for our hypothesis to be confirmed, we expected participants to show preference for answer (E) and then for answer (G). We presume that if the choice of answer (A) in Question 1 is the result of an understanding of the question task that leads the participant to imagine an attributive use of the name “Gödel”, then the participant will tend to understand John’s use of “Gödel” in “Gödel is a mathematical genius” as an attributive use as well. Therefore, the participant will choose answer (E) in Question 3 and answer (G) in Question 4. Notice that

³ To say that a participant imagines that John suspends the conventional meaning of “Gödel” is not to say that the participant masters theoretical notions. Rather, it means that the participant imagines that John might reply ‘I did not mean that *Gödel* was a mathematical genius, I meant that whoever is the author of the incompleteness of arithmetic is a mathematical genius’ (with emphasis on ‘Gödel’), if John were told that Gödel is a thief and charged with saying something false.

preference for answer (E) is also predicted by the explanation that attributes descriptivist intuitions on semantic reference to participants who choose answers (A) and (D). Yet such an explanation predicts that participants choose answer (H) to Question 4. Here we follow a hint suggested by Kripke. Speaking of attributive uses of definite descriptions, Kripke (1977: 257) says that an intuitive mark of the attributive is the parenthetical comment “whoever he/she is”. We believe that a similar suggestion holds for attributive uses of names too. We take it that if a participant chooses answer (A) as the result of the descriptivist intuition that John uses the name “Gödel” as if it were governed by the linguistic convention that it refers to the satisfier of the description “the person who really discovered the incompleteness of arithmetic”, the participant will tend to choose answer (H), in particular when that choice is presented as an alternative to choices (G) and (I). Thus, preference for answer (G) not only confirms our hypothesis but also disconfirms the interpretation that takes answer (A) to be expression of descriptivist intuitions on semantic reference.

Moreover, even if one maintains that the choice of answer (G) does not provide unquestionable evidence for the explanation that appeals to attributive uses of the name “Gödel”, it is still true that a higher frequency of choices (G) than of (H) options would be sufficient for casting a doubt on the reliability of Machery et al.’s experiment for testing intuitions on semantic reference. For even if one denies that the explanation that appeals to attributive uses of “Gödel” is confirmed by answer (G), for sure one cannot affirm that that explanation is disconfirmed and, consequently, ruled out. Therefore, that explanation remains a plausible hypothesis for accounting for answer (A).

To sum up, we conducted an experiment using sequential questions in order to test some hypotheses that explain the alleged descriptivist response in Machery et al.’s experiment. Our aim was not to test theories of reference but to collect evidence that the alleged descriptivist response is not the result of a descriptivist intuition on semantic reference. If confirmed, our hypotheses bring out a severe methodological limitation of Machery et al.’s experiment. The first part of the experiment – Question 1 – repeated Machery et al.’s test. We continued the experiment only with participants who chose answer (A), which Machery et al. took to be evidence for descriptivist intuitions on semantic reference. We tested the presence of the epistemic ambiguity with the second part of our experiment. Answers (A) on behalf of participants who read the definite description “the person who really discovered the incompleteness of arithmetic” from John’s epistemic perspective cannot be counted as evidence for descriptivist intuitions on semantic reference. We continued the experiment only with those participants who did not read the description from John’s epistemic perspective. We tested whether their choice of answer (A) can be taken as expression of descriptivist intuitions on semantic reference. To that end, in part 3 and part 4 of our experiment, we tested the hypothesis that explains answer (A) as the result of a pattern of reasoning that involves attributive uses of names. Clearly, a high percentage of participants who read the description from John’s epistemic perspective (in Question 2) and a high percentage of answers (A) that can be explained with attributive uses of the name “Gödel” (in Question 3 and Question 4) undermine the reliability of Machery et al.’s 2004 experiment and of many other experiments with a similar design that have been discussed in the debate on experimental semantics on theory of reference (Table 1).

Table 1 Sample size for each question

	Question 1	Question 2	Question 3	Question 4
N. participants	398	138	61	55

3 Results

398 participants participated in the experiment as volunteers (230 f, 168 m; MA: 31.42, SD: 12,39). They were randomly selected from the population and all Italian monolingual native speakers. The experiment was administered on-line, using Google Forms, through mailing-lists and social media. Since the progression of the questions was selective, the sample size for each question decreased from Q1 to Q4.

A chi-square analysis was conducted for each question presented in the task, to determine whether the frequencies observed in the answers, though quite sharp, might be due to chance fluctuations or can be considered statistically significant. The percentages of answers to each question are plotted in Fig. 1.

The first part of the experiment replicated once again the data of Machery et al.'s test. In Question 1 we collected 34,67% of answers (A) and 65,33% of answers (B) ($\chi^2(1) = 37.40$; $p < 0.0001$). The results of Question 2 were 55,8% of answers (C) and 44,2% of answers (D) ($\chi^2(1) = 1.85$, $p = \text{n.s.}$). The data of Question 2 show that more than a half of the participants who chose answer (A) read the definite description "the

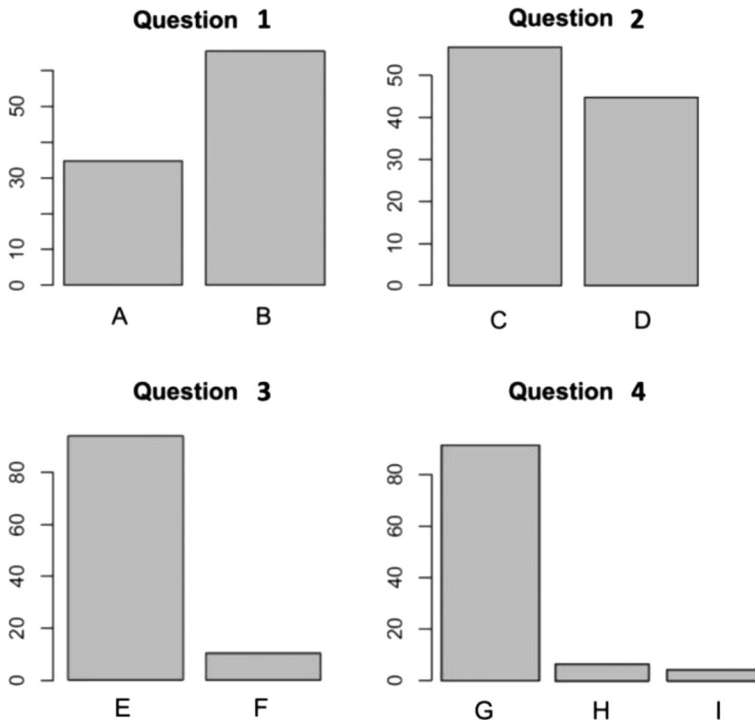


Fig. 1 Plots for each question's answers distribution (percentages)

person who really discovered the incompleteness of arithmetic” from John’s epistemic perspective. These data show that more than a half of answers (A) cannot be counted as expression of descriptivist intuitions on semantic reference. We take this result to undermine Machery’s et al.’s experiment to a significant extent. We conducted our test on Westerners only, but the fact that more than a half of Westerners’ answers (A) cannot be counted as expression of descriptivist intuitions on semantic reference raises doubt that Easterners’ answers (A) can be so counted. And it raises doubt on Machery et al.’s conclusion that there is a substantial variation in intuitions on semantic reference across different cultures.

The results of the last two questions undermine further Machery et al.’s experiment. The results of Question 3 were 90,16% of answers (E) and 9,84% of answers (F). The Chi-squared test confirmed the statistical significance of this difference ($\chi^2(1) = 39.36$, $p < 0.0001$). The results of Question 4 were 90.91% of answers (G), 5.45% of answers (H), and 3.64% of answers (I). The Chi-squared test confirmed that, though the difference between (H) and (I) answers was not significant ($\chi^2(1) = 0.2$, $p = \text{n.s.}$), answer (G) was chosen significantly more frequently than answer (H) ($\chi^2(1) = 44.31$, $p < 0.0001$), and answer (I) ($\chi^2(1) = 41.68$, $p < 0.0001$).

The results of the last two questions in part 3 and part 4 of our experiment show that also answers (A) that are not motivated by the reading of the definite description “the person who really discovered the incompleteness of arithmetic” from John’s epistemic perspective cannot be taken as expression of descriptivist intuitions on semantic reference. 90.91% of the participants who would agree with John, if John said “Gödel is a mathematical genius”, understand John’s utterance in way that can be explained with an attributive use of the name “Gödel”. If the choice of answer (A) were expression of descriptivist intuitions on semantic reference, the participants would understand John as speaking of Schmidt, because they are told that Schmidt is the satisfier of the description “the person who really discovered the incompleteness of arithmetic”. The data of our experiment falsify this prediction.⁴

In conclusion, Machery et al. took it for granted that the choice of answer (A) is expression of descriptivist intuitions on semantic reference. Based on that assumption, they claimed that referential intuitions vary across and within cultures and, thereby, Kripke’s refutation of classical descriptivism is in trouble. Our experiment shows that their assumption is in part false and in part unjustified with respect to Westerners. This evidence is sufficient for being sceptical that their assumption is true with respect to Easterners too. If this is so, there is evidence for being skeptic that Machery et al.’s original experiment is a test of intuitions on semantic reference.

4 Gödel, Schmidt, and speaker’s Reference

One recurrent objection among philosophers against experimental surveys on theories of reference modelled after Kripke’s Gödel/Schmidt case is that they conflate intuitions

⁴ Even if one is skeptic that these data are strong enough for confirming the hypothesis that the choice of answer (A) is to be explained with attributive uses of the name “Gödel”, that hypothesis is not disconfirmed either. Hence it remains a live possibility for explaining answer (A), and until it is ruled out, not even the 44,2% of answers (A), which remained after Question 2, can be taken as expression of descriptivist intuitions on semantic reference.

on semantic reference and intuitions on speaker's reference. In this section we argue that this objection rests on a conceptual mistake and relate the reasons why we think so to the results of our experiment. In the following section we discuss the consequence of this conceptual point for assessing subsequent experiments that try to avoid ambiguities.

Several commentators (Ludwig 2007; Deutsch 2009; Domaneschi et al. 2017; Heck Jr. 2018; Islam and Baggio 2020) maintain that probe questions like the one in Machery et al.'s survey are ambiguous since they can be understood in two ways:

- (1) To whom does the name "Gödel" refer when John uses it?
- (2) Whom does John intend to talk about when he uses the name "Gödel"?

Question (1) is about the semantic reference of the name "Gödel", but question (2), the critics say, is about the speaker's reference. The objection is that experiments with such a design are not reliable because they conflate intuitions on semantic reference and intuitions on speaker's reference.⁵

We agree that the probe question in Machery et al.'s experiment can be understood as reported in (1) and (2). Yet, we disagree that the understanding reported in (2) is the result of a form of reasoning about uses of proper names that can be rationally reconstructed with Kripke's notion of speaker's reference. Our claim is that the whole debate on the semantic/speaker's reference ambiguity rests on a conceptual mistake. In the following, we justify our claim and relate it to the results of our survey. We argue that the first part (Question 2) of our experiment explains the understanding reported in (2) in terms of the epistemic perspective ambiguity, while the second part (Questions 3 and 4) in terms of attributive uses.

Our concern is the following. Is, in the Gödel case, the answer that John talks about the person who really discovered the incompleteness theorem the result of a form of reasoning about John's use of the name "Gödel" that can be rationally reconstructed with the notion of speaker's reference? In other terms, is that answer the result of a reasoning that can be rationally reconstructed by ascribing to John the intention to use the name "Gödel" to make speaker's reference to Schmidt, the person who really proved the incompleteness theorem? We argue that the answer to this question must be in the negative.

The semantic referent of a designator is determined by the conventions of the language to which the designator belongs. Kripke says that the speaker's referent of a designator is that object which the speaker intends to talk about, on a given occasion, and takes to fulfil the conditions for being the semantic referent of the designator. On Kripke's view, the use of a designator is directed by two intentions: a general intention and a specific intention. The general intention is the intention to use the designator with its semantic referent in accord with the conventions of the language. The specific intention is the intention to use the designator to refer to a particular object on a given occasion. Kripke distinguishes two cases in which the speaker might believe that the object referred to on a given occasion fulfils the conditions for being the semantic referent of the designator: a simple case and a complex case. In the simple case the speaker has the specific intention to refer to the semantic referent. In the simple case,

⁵ See Machery and Stich (2012), and Machery et al. (2015) for a reply to this objection.

then, the specific intention and the general intention are one and the same intention. In the complex case, the speaker has the specific intention to refer to a certain object and believes that the specific intention and the general intention determine the same object.

For the speaker, on a given occasion, may believe that his specific intention coincides with his general intention for one of two reasons. In one case (the “simple” case), his specific intention is simply to refer to the semantic referent: that is, his specific intention *is* simply his general semantic intention... Alternatively - the “complex” case - he has a specific intention, which is distinct from his general intention, but which he believes, as a matter of fact, to determine the same object as the one determined by his general intention. (For example, he wishes to refer to the man “over there” but believes that he *is* Jones.) In the “simple” case, the speaker’s referent is, *by definition*, the semantic referent. In the “complex” case, they may coincide, if the speaker’s belief is correct, but they need not. (The man “over there” may be Smith and not Jones.) (Kripke 1977: 264).

On Kripke’s view on speaker’s reference, to claim that the experimental subjects, who respond that John talks about the person who really proved the incompleteness theorem, take John to make speaker’s reference to Schmidt is to claim that they envisage a context in which John uses the name “Gödel” with the specific referential intention to refer to Schmidt. This amounts to claiming that those experimental subjects envisage a context in which John’s general intention about the use of “Gödel” and his specific intention are distinct and determine different individuals, Gödel the general one and Schmidt the specific one. Such a context is a case of the complex type, in which the general referential intention of the speaker and his specific referential intention are distinct.

Here comes the problem for such a picture. How can John have the specific referential intention to make speaker’s reference to Schmidt, the satisfier of the description “the person who really discovered the incompleteness theorem”? We assume that in order to have a referential intention and make reference to something a speaker must have a representation of it. Representations can be descriptive or nondescriptive. Since Russell’s distinction between knowledge by description and knowledge by acquaintance philosophers have debated whether reference requires nondescriptive representations or it is possible with descriptive representations.

John does not have and cannot have any nondescriptive representation of Schmidt. Since John never met Schmidt, he cannot have any representation of Schmidt in memory. And there can be no occasion in which John might have any perceptual representation of Schmidt, since Schmidt died long time before. Nor has John ever been told about Schmidt. Thereby John does not have any representation of Schmidt coming from a chain of communication. John has the name “Gödel” in his language, but according to the Kripkean theory of reference the name “Gödel” in John’s language semantically refers to Gödel. Thus, for philosophers who say that reference requires nondescriptive representations, John cannot have any intention to make reference to Schmidt, since John does not have any nondescriptive representation of Schmidt. A fortiori John cannot have any specific intention to make speaker’s reference to Schmidt.⁶

⁶ Notice that in footnotes 26 and 28 of *Speaker’s Reference and Semantic Reference* Kripke says that cases of speaker’s reference with names are cases of misidentification. We take it that one has to have a nondescriptive representation of someone in order to take him/her for someone else.

Matters are subtler for philosophers who say that reference is possible with descriptive representations. Indeed, John is able entertain the descriptive representation that can be expressed with the definite description “the person who really discovered the incompleteness theorem” and is able to associate it with the name “Gödel”. The difficulty is to explain how this descriptive representation enables John to make speaker’s reference to Schmidt by using the name “Gödel”. If it is the descriptive representation that the speaker associates with a certain name that in virtue of which the speaker refers to a certain object, then the name in question is a descriptive name. Whenever a descriptive name is used with the intention to make reference to the satisfier of the description associated with the name, that is an occasion in which the general referential intention of using the name to refer to its semantic referent and the specific referential intention to refer to a certain object are one and the same intention.⁷ Then, it does not make sense to distinguish the semantic reference from the speaker’s reference in such cases. In other terms, if experimental subjects answer that John is talking about the person who really discovered the incompleteness theorem because they envisage John to use the name “Gödel” as a name whose referent is fixed by the description “the person who really discovered the incompleteness theorem”, then they envisage John to use “Gödel” as a descriptive name. If this is the case, their intuitions are on semantic reference and in accord with descriptivism.⁸

The objection that the probe question in Machery et al.’s (2004) experiment can be heard as concerning speaker’s reference is formulated as follows. Here we present Heck’s (Heck Jr. 2018) formulation of the objection as representative of the train of thoughts that is recurrent among the commentators of Machery et al.’s survey:

It would thus be entirely natural for someone trying to answer that question to imagine a typical use John might make of the name and to respond on that basis. But the only thing John has ever heard about Gödel, we are told, is that he proved the incompleteness theorem. So when I try to imagine John saying something about “Gödel”, the sorts of things that come to mind are very often ‘about’ the person who proved that theorem, e.g., “Gödel must have studied really hard”.

So, I submit, it’s easy to see why someone might want to say that, when John uses the name “Gödel”, he will (in a typical case) be ‘talking about’ Schmidt: the person who actually proved the incompleteness theorem. To borrow Donnellan’s language, that is who he will ‘have in mind’. But anyone who answered the probe question that way, and did so for those sorts of reasons, would be making a claim about speaker’s reference, not semantic reference. (Heck Jr. 2018: 257).

This objection rests on a mistake. It says that what John might do with the name “Gödel” is to make speaker’s reference to Schmidt, the person who really proved the incompleteness theorem. We argued that this is not the case.

In the passage quoted above, Heck claims that we can borrow Donnellan’s terminology and say that John has Schmidt in mind. But this is exactly what we cannot do

⁷ We claim that this is true also in a non-satisfactional model of reference determination through description-based thought like the one in Dickie’s (2015).

⁸ This is so also in the non-satisfactional model advanced by Dickie (2015).

from Donnellan's point of view. Donnellan (1966) put his notion of having in mind in correspondence with Russell's notion of acquaintance. Both notions play an epistemic role that grounds the possibility of referential intentions and singular thoughts of objects.⁹ John is told that Gödel is *the author of the incompleteness theorem*. For Donnellan the fact that John can entertain that descriptive content does not allow John to have its satisfier (Schmidt) in mind. For some philosophers¹⁰ (but not for Donnellan) John can have Schmidt in mind if the descriptive representation *the author of the incompleteness theorem* has the function of fixing the conventional referent of the name "Gödel" for John. But in that case "Gödel" in John's language would be a descriptive name. If so, there would be no ambiguity affecting the empirical data collected by Machery et al. The answer that John talks about the person who really discovered the incompleteness theorem would report a genuine semantic intuition.

It is important to stress that we need not assume that reference requires nondescriptive representations. But speaker's reference with names does require nondescriptive representations of objects, i.e. having them in mind in Donnellan's sense.¹¹ That is why it does not make sense to say that John makes speaker's reference to Schmidt with the name "Gödel". The only way John can refer to Schmidt is by using "Gödel" as a descriptive name, which semantically refers to Schmidt.

To sum up, a Kripkean theorist cannot predict the answer that John talks about the person who really discovered the incompleteness theorem as the result of a form of reasoning about uses of the name "Gödel" that can be rationally reconstructed with the notion of speaker's reference.

This is not to say that the probe question in Machery et al.'s experiment is not ambiguous. Indeed, the data of our experiment point just in the direction that Machery et al.'s experiment is ambiguous. We agree that the answer that John talks about the person who really discovered the incompleteness of arithmetic might originate from an understanding of the probe question that is captured by (2):

(2) Whom does John intend to talk about when he uses the name "Gödel"?

We claim, however, that this understanding is explained with the epistemic ambiguity we tracked in Question 2 of our experiment and with the attributive uses we tracked in Questions 3 and 4.

The intention that participants attribute to John when they say that John *intends* to talk about the person who really discovered the incompleteness of arithmetic is not the referential intention of referring to the individual (Schmidt) who satisfies the description "the person who really discovered the incompleteness of arithmetic" in the story reported in the vignette. As said, from a Kripkean point of view, John cannot have such a referential intention, unless John uses the name "Gödel" as a descriptive name.

Rather, borrowing a terminology not from Donnellan, but from Strawson (1950), we might say that the intention ascribed to John is a *predicative* intention. Strawson said that the occurrence of "the F" in "N is the F" does not serve to make reference to an individual, but to say something of the individual referred to with "N". Strawson called *predicative uses* such occurrences of definite descriptions. John is told that Gödel is the

⁹ For a survey on the connections and differences between Russell's *acquaintance* and Donnellan's *having in mind* see Kaplan (2012).

¹⁰ See Jeshion (2010) and Dickie (2015). Dickie develops a non-satisfactional model of descriptive names.

¹¹ Notice that Heck makes reference to Donnellan's notion of *having in mind*.

author of the incompleteness theorem. John has a belief that he can express with the sentence “Gödel is the person who really discovered the incompleteness theorem”. This is just a sentence containing a predicative occurrence of a definite description in Strawson’s sense.

When participants say that John intends to talk about the person who discovered the incompleteness theorem, they are reporting what John believes of Gödel. From John’s epistemic perspective, Gödel is the person who discovered the incompleteness of arithmetic. To put it another way, experimental subjects report how John would disambiguate the name “Gödel”. They report how John would answer the question “Who is Gödel?” (The information used to disambiguate a name need not be true of the bearer of the name¹²). To say that John would answer that question saying “Gödel is the person who discovered the incompleteness theorem” is not to say that John makes speaker’s reference to the satisfier of the description “the person who discovered the incompleteness theorem”. Likewise, we do not say of someone who says “Columbus was the first European to land in the western hemisphere” that they make speaker’s reference to some Norseman with the name “Columbus”.

In Heck’s example, too, when John says “Gödel must have studied really hard”, the reason why John utters that sentence might be that he believes that Gödel is the author of the incompleteness theorem. But this is not a case in which John’s specific referential intention diverges from his general semantic intention of using “Gödel” with its conventional meaning. It is not a case in which John has an individual in mind independently of the name “Gödel”, takes it to be the referent of “Gödel”, and intends to refer to him (specific intention). The only individual John can have in mind is the bearer of the name “Gödel”. And, according to a Kripkean theory of reference, that individual is Gödel, not Schmidt. This is a typical case in which, Kripke says, the specific intention is the same as the general semantic intention.

The probe question in Machery’s et al.’s experiment can indeed be interpreted according to question (2) reported above, and we agree that interpretations related to (2) have nothing to do with semantic reference. Yet, interpretations related to (2) have nothing to do with speaker’s reference either. The results of the first part of our experiment show that more than a half of answers (A) report a predicative intention that participants, who read the definite description “the person who really discovered the incompleteness of arithmetic” from John’s epistemic perspective, attribute to John.

The second part of our experiment shows that also the remaining (A) answers can be seen as triggered by an understanding of the probe question as a question about John’s intentions. However, these are not cases in which participants envisage John to have the intention to make speaker’s reference to Schmidt, the satisfier of the description. Our experiment gives evidence that they are cases in which participants envisage John to make an attributive use of the name “Gödel”. One might object that attributive uses are a type of speaker’s reference. But this is not accurate. Kripke never mentions attributive uses of names in *Speaker’s reference and semantic reference*. In footnote 36 of *Naming and Necessity* Kripke does not say that attributive uses of names are a sort of speaker’s reference. Kripke says that attributive uses can be accounted for without introducing ambiguities for names. The parallel between attributive uses of names and cases of speaker’s reference with names is exhausted in that they are both pragmatic

¹² On this point see in particular Evans (1982) and Dickie (2015).

phenomena. But they are very distinct pragmatic phenomena, as Kripke's typical example of speaker's reference with Jones/Smith raking the leaves shows. The point remains that even if one considers attributive uses as a type of speaker's reference, if John makes an attributive use of the name "Gödel", he is not making speaker's reference to Schmidt. In attributive uses speakers intentionally suspend the conventional meaning of names. In typical cases of speaker's reference, instead, the conventional meaning of names is in force, but speakers misidentify the individuals to whom they intend to refer for the semantic referents of the names.

5 The Epistemic Ambiguity and Clarified Questions

In this section we explain what distinguishes our survey from Sytsma and Livengood's survey and the extent to which our survey is relevant to assess subsequent works in which Machery and colleagues tried to show that cross-cultural differences in referential intuitions persist in tests that employ clarified questions to avoid ambiguities.

We owe to Sytsma and Livengood (2011) the idea that the probe question in Machery et al.'s original experiment can be understood in two different ways depending on whether the definite description "the person who really discovered the incompleteness of arithmetic" is read from John's epistemic perspective or the narrator's epistemic perspective. From John's epistemic perspective the description identifies Gödel. In this section we argue that our survey offers a deeper understanding of Sytsma and Livengood's powerful insight. In the previous section we said that the epistemic ambiguity has to do with the speaker's (John) intentions, but these intentions are predicative, not referential. The sense in which subjects say that John talks about the person who really discovered the incompleteness of arithmetic is that John believes of Gödel that he is the person who really discovered the incompleteness of arithmetic. Subjects report John's predicative intentions, not his referential intentions. If this is the real nature of the epistemic ambiguity, then the way to capture it with Question 2 in our experiment is more accurate than the ways Sytsma and Livengood used in their studies.

We asked participants to say whether the description "the person John believes to have really discovered the incompleteness of arithmetic" captures what they meant when they chose answer (A) in Machery et al.'s experiment. The question in our test focuses in a very simple and direct way on whether participants read the description "the person who really discovered the incompleteness of arithmetic" from John's epistemic perspective, i.e. in terms of what John believes of Gödel. The method of asking participants to report how they understood the probe question is used by Sytsma and Livengood in one of their studies (Study 4). We will come back to it shortly. Before that, we discuss the other method that Sytsma and Livengood employed to detect the epistemic ambiguity. Sytsma and Livengood used clarified questions that, in their view, guide the attention of participants on John's epistemic perspective or on the narrator's epistemic perspective. We argue that those clarified questions are too much convoluted and, in consequence of their complexity and difficulty, they are not accurate to detect the epistemic ambiguity.

Sytsma and Livengood hypothesised that clarifying the probe question to encourage taking John's epistemic perspective would result in a lower percentage of (B) answers than found in Machery et al.'s original experiment. Likewise, clarifying the probe

question to encourage taking the narrator's epistemic perspective would result in a higher percentage of (B) answers. Here is the clarified probe question that Sytsma and Livengood used to encourage taking John's epistemic perspective:

John's Perspective: When John uses the name "Gödel" does John think he is talking about: (A) the person who the story says really discovered the incompleteness of arithmetic? Or, (B) the person who the story says got hold of the manuscript and claimed credit for the work?

The first important point to notice is that this question is about John's conscious access to the contents of his own talk involving the name "Gödel". As such it is a question about John's second order thoughts, and it is a difficult question not only for laypersons, but for theoreticians as well. Indeed, the question has a *de dicto* interpretation and a *de re* interpretation. Under the *de dicto* interpretation it is a very tricky question, because John is not aware of the story at all. Therefore, whomever John is talking about, John cannot think that he is talking about that person under the description "the person who *the story says* really discovered the incompleteness of arithmetic", nor under the description "the person who *the story says* got hold of the manuscript and claimed credit for the work".

The *de re* interpretation is even more difficult to understand. It asks to tell whether John has a second order *de re* thought about the discoverer of the incompleteness of arithmetic (Schmidt) or about the thief of the proof (Gödel). It is very hard to understand why the *de re* interpretation should encourage taking John's epistemic perspective, provided that the epistemic ambiguity has to do with John's predicative intentions, as we argued. Moreover, we can think of at least one explanation that counts (A) answers to the clarified question under the *de re* interpretation as evidence in favour of descriptivism. Here is the explanation. John might have a second order *de re* thought about the discoverer of the incompleteness of arithmetic (Schmidt) because John has the name "Gödel" in his idiolect and the name "Gödel" in his idiolect semantically refers to the discoverer of the incompleteness of arithmetic (Schmidt). John might think that he is talking about *Gödel* (the bearer of "Gödel" in his idiolect, i.e. Schmidt) with the name "Gödel". This enables John to have a second order *de re* thought about the discoverer of the incompleteness of arithmetic (Schmidt), provided that "Gödel" in John's idiolect semantically refers to Schmidt. In light of this explanation, the higher percentage of (A) answers is not the result of taking John's epistemic perspective. To the contrary, it is evidence in favour of descriptivism.

We grant that there is a way in which Sytsma and Livengood's clarified question might encourage taking John's epistemic perspective. That is so if participants neglect the phrase "the story says" and report John's second order *de dicto* thoughts. We think that this is a real possibility. As said, the clarified question is convoluted and it is plausible that participants try to simplify it somehow. For example, participants might understand the phrase "the story says" with a parenthetical sense and neglect it. It remains that Sytsma and Livengood's clarified question is not accurate to detect the epistemic ambiguity, since in order to achieve the goal for which it is employed, participants have to neglect one part of its wording.

The second method that Sytsma and Livengood used to detect the epistemic ambiguity was to ask participants to report which of two restatements best corresponded to their understanding of the original probe question in Machery et al.'s experiment. We did the same in Question 2 in our experiment, but we argue

that our way to detect the epistemic ambiguity is more accurate than theirs. Here are the two restatements that Sytsma and Livengood presented to participants in their Study 4:

(1) When John uses the name “Gödel,” does *John think* he is talking about: (A) or (B). Or, (2) When John uses the name “Gödel,” is he *actually* talking about: (A) or (B).

The problematic points we find in these two restatements are the following. Restatement (1) raises the same order of difficulty as the clarified question discussed above. It is convoluted and it is not a direct question on how participants read the definite description “the person who really discovered the incompleteness of arithmetic”. It is a question about John’s second order thoughts about the contents of his own talking involving the name “Gödel”, which opens the possibility of *de dicto* reports and *de re* reports. The advantage of restatement (1) over the clarified question is that *de dicto* reports of John’s thoughts are now available. We agree that if participants respond that John is talking about the person who really discovered the incompleteness of arithmetic because they are reporting what John believes of Gödel, participants are likely to respond that John thinks that he is talking about the person who really discovered the incompleteness of arithmetic. In the end, the percentage of responses that choose restatement (1) might be significative, but at the cost of a long detour. Moreover, as we argued above, there is an explanation of *de re* reports of John’s second order thoughts according to which such reports are not the result of taking John’s epistemic perspective, but of genuine semantic intuitions in favour of descriptivism. And the possibility of *de re* reports of John’s thoughts is not ruled out in restatement (1).

Restatement (2) is identical to the original probe question except for the insertion of the adverb “actually”. We see no reason why the insertion of the adverb “actually” makes any difference and the choice of restatement (2) is the result of taking the narrator’s epistemic perspective. If participants respond that John is talking about the person who really discovered the incompleteness of arithmetic, meaning that John believes of Gödel that he is the person who really discovered the incompleteness of arithmetic, there is no reason why they should not say that John is *actually* talking about the person who really discovered the incompleteness of arithmetic, meaning that John *actually* believes of Gödel that he is the person who really discovered the incompleteness of arithmetic. Thus, it not obvious that the difference between restatement (1) and restatement (2) corresponds to the difference between taking John’s epistemic perspective and taking the narrator’s epistemic perspective.

In sum, we credit Sytsma and Livengood with the powerful insight that strikes at the heart of problem with Machery et al.’s original experiment. Our survey adds a deeper understanding of the nature of the epistemic ambiguity and a more accurate and reliable method for detecting it.

Before addressing the clarified questions Sytsma and Livengood used to encourage taking the narrator’s epistemic perspective, we turn to discuss the impact of our survey on subsequent works in which Machery and colleagues tried to avoid ambiguities.

Machery et al. (2015) adopt two strategies for avoiding ambiguities. The first is using a clarified probe question, the second is using a modified vignette. Here is their clarified probe question:

When John uses the name “Gödel”, *regardless of whom he might intend to be talking about*, he is *actually* talking about:

(A) the person who really discovered the incompleteness of arithmetic;

(B) the person who got hold of the manuscript and claimed credit for the work.

Machery and colleagues present this study in order to respond to the objection that participants conflate intuitions on semantic reference and intuitions on speaker's reference. If they were right that the rephrasing of the probe question leads participants to read the probe question as asking about semantic reference, their clarified question would be successful in avoiding the epistemic ambiguity too. We argue that they are wrong.

Indeed, Machery and colleagues themselves point out some initial difficulties. The first is that laypersons might not grasp (we believe that it is very likely that they do not grasp it) the distinction between semantic reference and speaker's reference. As a consequence of that, laypersons might tend to neglect the phrase "regardless of whom he might intend to be talking about". The second difficulty concerns the adverb "actually". It is not obvious that the presence of the adverb "actually" encourages participants to read the probe question as asking about semantic reference. Consider Kripke's example of the speaker who mistakes Smith for Jones and says "Jones is raking the leaves". It is correct to say that the speaker is *actually* making speaker's reference to Smith with the name "Jones".

Machery et al. (2015: 71) reply that these difficulties are not as serious as they might seem due to the contrastive nature of the probe question that asks participants to tell whom they think John is "actually talking about" *in contrast to* whomever he may be "intending to talk about". We argue that this reply rests on a conceptual mistake. The problem is that the phrase "regardless of whom he might intend to be talking about" makes no sense as it stands, at least from a Kripkean standpoint. In the previous section, we said that when speakers use names there are always two intentions that are operative: the general intention of using the name with its conventional meaning and the specific intention of using the name to refer to a specific individual. The two intentions might be identical or distinct. When they are distinct they might converge on the same individual or diverge on two different individuals (Kripke's Smith/Jones example). The parenthetical phrase in the clarified probe question does not make sense taken at face value. The contrastive nature of the probe question can be grasped only by experts who know very well the distinction between semantic reference and speaker's reference and read the parenthetical phrase as meaning *regardless of John's specific referential intention – when the specific referential intention diverge from the general referential intention – or John's predicative intentions* (Notice, by the way, that John cannot have such a specific referential intention, as we argued in the previous section). This is not the case with laypersons, who, thereby, might tend to neglect the rewording of the probe question. This last possibility is acknowledged by Machery and colleagues, who turned to the second strategy for circumventing the problem. They added the following paragraph to the original vignette in order to lead participants to focus on semantic reference:

One night, John is sitting in his room, reviewing for his mathematics exam by going over the proof of the incompleteness theorem. After a while, he says to his roommate, "Gödel probably got a huge number of awards from mathematical society".

We agree that this modified vignette encourages responses that concern semantic reference. However, first we disagree with Machery and colleagues on the reason why that is so, and second the fact that the vignette encourages responses that concern semantic reference is not relevant for avoiding the epistemic ambiguity, given that the epistemic ambiguity has to do with predicative intentions and not referential ones. Machery et al. (2015: 72) argue that “given the information provided in the vignette, only the man who stole the theorem can be viewed as having won a huge number of awards from mathematical societies”. But this is not the reason why the responses are about semantic reference. The reason is that the depicted context in which John says “Gödel probably got a huge number of awards from mathematical society” is one in which his general referential intuition and his specific referential intuition are identical, i.e. John intends to speak of the conventional referent of the name “Gödel”. Yet this point is not relevant for avoiding the epistemic ambiguity. Participants might think that John uses the name “Gödel” to semantically refer to Gödel and choose answer (A) because they report what John believes of Gödel. As we have been stressing in the previous section, participants who read the definite description from John’s epistemic perspective report John’s predicative intentions, not his referential intentions. Obviously, participants might think that John believes that Gödel won a huge number of awards just because John believes that Gödel is the person who really discovered the incompleteness of arithmetic.¹³

In conclusion, we deny that the subsequent studies by Machery et al. (2015) succeed in avoiding the epistemic ambiguity. We come back now to discuss two clarified questions that Sytsma and Livengood used for encouraging taking the narrator’s epistemic perspective. One is the following:

Narrator’s Perspective: When John uses the name “Gödel,” is he actually talking about: (A) the person who the story says really discovered the incompleteness of arithmetic? Or, (B) the person who the story says got hold of the manuscript and claimed credit for the work?

We agree that description (A) cannot be read from John’s epistemic perspective with its literal meaning, since John is not aware of the story reported in the vignette. Nonetheless, Sytsma and Livengood found a high degree of variation in responses to the narrator’s perspective probe. In fact, only 57,4% of participants chose answer (B). These results might seem to count as evidence that many participants have referential intuitions in favour of descriptivism. However, after the probe question participants were asked to explain their answers and, in reviewing the explanations given by participants who chose answer (A), Sytsma and Livengood found that only 26,7% gave explanations that could be expressions of descriptivist referential intuitions. They say that most participants were specifically considering John’s epistemic perspective and gave explanations that were compatible with having causal-historical referential intuitions. They conclude that a significant proportion of variation in participants’ answers reflects residual ambiguity, implying that the narrator’s perspective probe is not accurate. We hypothesise that an explanation of the residual ambiguity is that some participants read the phrase “the story says” outside the description and choose answer

¹³ Machery, Sytsma, and Deutsch made another study with the following phrase: “Gödel probably got a huge number of awards from mathematical societies for the proof of the incompleteness of arithmetic!”. This is inessential to our criticism.

(A) to report that John believes of Gödel that he is the person who really discovered the incompleteness of arithmetic, as the story in the vignette says.

Sytsma and Livengood ran another test using a clarified narrator's perspective probe:

Clarified Narrator's Perspective: Having read the above story and accepting that it is true, when John uses the name "Gödel," would you take him to actually be talking about: (A) the person who (unbeknownst to John) really discovered the incompleteness of arithmetic? Or, (B) the person who is widely believed to have discovered the incompleteness of arithmetic, but actually got hold of the manuscript and claimed credit for the work?

Sytsma and Livengood found a significant higher percentage of (B) answers (73,8% among non-philosophers; 75,9% among philosophers). It might seem that the clarified narrator's perspective probe succeeds in leading participants to take the narrator's perspective. Unfortunately data are not so uncontroversial. Sytsma and Livengood's test is structurally identical to one test Machery, Olivola, and De Blanc ran in their 2009 experiment for proving a congruence between referential intuitions and intuitions on truth-values. And the clarified narrator's perspective probe question is nearly identical to the probe question used in Machery et al. (2009):

Having read the above story and accepting that is true, when Ivy uses the name "Tsu Ch'ung Chih," whom do you think she is actually talking about:

- (A) the person who (unbeknownst to Ivy) really determined the solstice times? or.
- (B) the person who is widely believed to have discovered the solstice times, but actually stole this discovery and claimed credit for it?

Machery, Olivola, and De Blanc found results that are very close to the result of Machery et al.' original 2004 experiment, suggesting that there is no impact of the epistemic ambiguity and (A) answers are expressions of genuine referential intuitions.

We believe that the difference between the results collected in Sytsma and Livengood's test and the results collected in Machery, Olivola, and De Blanc's test suggests that something is not accurate in the probe question. We venture again to make a hypothesis. It is a possibility that after reading the first part of the probe question – "is he talking about", "would you take him to actually be talking about", "whom do you think she is actually talking about" – participants understand that they have to report either John's (Ivy's) referential intentions, i.e. whom John (Ivy) refers to with the name "Gödel" ("Tsu Ch'ung Chih"), or John's (Ivy's) predicative intentions, i.e. what John (Ivy) believes of Gödel (Tsu Ch'ung Chih). If participants enter the mood for reporting John (Ivy) predicative intentions, then they might go on neglecting the parenthetical phrase "(unbeknownst to John (Ivy))" in answer (A) or understanding it as meaning the person who John *falsely* believes to have discovered the incompleteness of arithmetic. After all, the epistemic ambiguity might affect participants' responses even in tests that employ the clarified narrator's epistemic probe question.

This long examination of attempts to avoid ambiguities with clarified probe questions and modified vignettes helps us to highlight two important points with respect to which our study casts a novel perspective over the debate in experimental semantics. The first is that we provided a novel account of the nature of the epistemic ambiguity that connects it to intuitions on predicative intentions and not to intuitions on referential

intention. We claim that a large part of the debate in experimental semantics that focuses on the semantic reference/speaker's reference ambiguity rests on a conceptual mistake. The second is that our account of the epistemic ambiguity provides a novel way for assessing previous experiments. We argued that (i) Sytsma and Livengood's methods for detecting the epistemic ambiguity are not accurate and (ii) most of Machery and colleagues' subsequent works miss the target.

6 Conclusions

The results of our experiment point out that the percentage of answers (A) that can be taken to be expression of descriptivist intuitions in scenarios like the Gödel/Schmidt one is not statistically significant. These results raise doubts on the reliability of Machery et al.'s experiment. Our survey reinforces the camp of the critics of Machery et al.'s experiment. But the import of our survey goes further than the mere questioning of the reliability of Machery et al.'s experiment. There are at least three points that deserve to be highlighted.

First, we proposed a novel method for tracking the epistemic perspective ambiguity. We owe the idea of the epistemic perspective ambiguity to Sytsma and Livengood (2011). Sytsma and Livengood tried to track the epistemic perspective ambiguity working with clarified question tasks. Our method has the advantage of being simpler. We asked directly the participants to report how they understood the definite description "the person who really discovered the incompleteness of arithmetic" after answering the original probe question in Machery et al.'s experiment.

Second, since the publication of Machery et al.'s survey an intense debate started around the objection that the original experiment conflates intuitions on semantic reference and intuitions on speaker's reference. One important outcome of our survey is that the entire debate on the semantic/speaker's reference ambiguity rests on a mistake. Our survey provides evidence that the alleged descriptivist responses are not the result of a form of reasoning about uses of names that can be rationally reconstructed with Kripke's notion of speaker's reference. When participants respond that John talks about the person who really discovered the incompleteness of arithmetic because they understand that John intends to speak of the person who really discovered the incompleteness of arithmetic, they are not expressing the intuition that John uses the name "Gödel" to make speaker's reference to Schmidt. The first part of our experiment (Question 2) gives evidence that more than a half of those participants attribute a predicative intention to John. They report what John believes of Gödel. This is our novel account of the way the epistemic perspective ambiguity affects the participants' responses. The second part of our experiment (Question 3 and Question 4) shows that the remaining part of participants who chose answer (A) did so because they envisaged John to make an attributive use of the name "Gödel". Again, there is no trace of the intuition that John makes speaker's reference to Schmidt. Our survey shows that a large part of the debate on experiments in theory of reference focused on the semantic/speaker's reference ambiguity misses the target.

Third, in the introductory section we recalled that some philosophers (Cappelen 2012; Deutsch 2009, 2010, 2015, and Martí 2009, 2012, 2014) deny relevance to Machery et al.'s experiment because they reject from the outset that philosophical

theories of reference employ the method of cases. It might seem that those philosophers are free to ignore Machery et al.'s conclusion that a large part of Westerners have referential intuitions that accord with descriptivism. We are sympathetic with those philosophers, but we disagree that they are free to ignore the findings of Machery et al.'s experiment. In particular, it is relevant to their view that a certain explanation of the alleged descriptivist response is ruled out. Suppose it is true, as Heck Jr. (2018) and Domaneschi and Vignolo (2020) argued, that the way participants perform the task of the experiment is not by reflecting on metalinguistic concepts like *reference* or the more colloquial *talking about*, but by imagining John to make a particular use of the name "Gödel", e.g. uttering the sentence "Gödel was a mathematical genius", and trying to figure out what John is saying. If it turned out that the participants understood John as if he were saying that Schmidt is a mathematical genius, that would provide data relevant to theories of reference, even for philosophers who reject the method of cases.

The point is that, for philosophers who reject the method of cases, theories of reference are theoretically assessed together with syntax, semantics, and pragmatics on the basis of their contribution to the explanation of linguistic usage and communication and not on the basis of people's referential intuitions. Many philosophers agree that Kripke's main argument against descriptivism is the ignorance and error argument. The ignorance and error argument starts with the premise that many people do not associate with names descriptions that identify their bearers. Nonetheless their linguistic usage and communication are successfully explained by theories that say that they use and understand names as referring to their bearers. Evidence against descriptivism, then, comes not from polling people's referential intuitions but from the observation that descriptivism fails to provide a successful explanation of linguistic usage and communication. From this perspective, our survey is important because it shows that answers (A) – more than 40% of Westerners responses – are not the result of the fact that participants envisage John to use the name "Gödel" for speaking of Schmidt. Such a result would undermine Kripke's ignorance and error argument since descriptivism would explain how more than 40% of Westerners understand hypothetical communication with John in the Gödel/Schmidt scenario. Our survey provides evidence that this is not the case. More than a half of answers (A) are explained with the interpretation of the definite description "the person who really discovered incompleteness of arithmetic" from John's epistemic perspective. Almost the totality of the remaining answers (A) is explained ruling out that participants figure out that John uses the name "Gödel" to speak of Schmidt.

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