# Performative reference

**Bahram Assadian**[1] · **Giorgio Sbardolini**[2]

## Abstract

Reference may be fixed by stipulation through a speech act, just like bets and marriages. An utterance of *Let n refer to an/the F* is a speech act by means of which, if successful, a speaker institutes a practice of referring, and a hearer coordinates by choosing a referent from the domain of discourse. We articulate a metasemantics for this view. On our view, the interlocutors can select a referent randomly, if necessary, motivated by the incentive to coordinate on the use of a name. Moreover, we argue that reference fixed by a performative speech act is 'thin', or 'undemanding'. Finally, we defend the thesis that co-reference might not determinately obtain despite reference being fixed. Performative reference makes sense of ordinary speakers' practices, who appear to be very liberal and unimpressed by skepticism toward causally inert or epistemically indiscernible objects.

**Keywords** Reference · Singular terms · Metasemantics · Speech acts · Indeterminacy

## 1 Motivation

Consider the following sentence:

1. I took a dog home from the shelter. Let's call it Archie.

Is *Archie* referential? If so, it presumably refers to the dog. But what does it take for it to refer? In this paper, we articulate and defend a speech-act-theoretic account of the metasemantics of names such as *Archie*, in contexts such as (1). According to our account, a name can get its referent by virtue of the speakers' participation in a succesful speech act. We call this *performative reference*, and argue that it is a

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✉ Bahram Assadian
bahram.assadian@gmail.com; bahram.assadian@unito.it

Giorgio Sbardolini
g.sbardolini@lmu.de; giorgio.sbardolini@gmail.com

[1] Department of Philosophy and Education, Center for Logic, Language and Cognition (LLC), University of Turin, Turin, Italy

[2] Munich Center for Mathematical Philosophy, LMU, Munich, Germany

relatively undemanding conception of reference: all it takes for a name to refer is for the interlocutors to coordinate on it, and for the referent to exist.

In the case of (1), the speakers can look at the candidate referent, and their perceptual environment facilitates coordination on the use of the name. We do not deny that perception or acquaintance may play a role in fixing reference, but we will argue that theirs is a supporting role. Performative reference is primarily grounded in the pragmatic and social fact that a successful speech act was made in uttering (1). A few conditions have to be satisfied to ensure success, as for other performatives, but we will argue that causal or epistemic access to the referent are not necessary conditions. We will also argue (against Frege) that the possibility of distinguishing the referent by means of a definite description is not a success condition.

To say *I apologize* is to apologize, and to say *I do* is to marry, if conditions apply. Apologies and marriages are stipulated to exist by successful utterances of the relevant formulas. Reference can also be stipulated. In a slogan, to say *Let n refer* is to refer, if conditions apply.

The notion of performative reference is inspired (and, in many respects, anticipated) by J. L. Austin. Utterances of reference-fixing performatives, such as *Let n refer to an/the F*, correspond to what Austin (1962, pp. 32, 69–71) calls 'explicit performatives' such as *I promise I'll be there at 10:00*, as opposed to 'primary performatives' such as *I'll be there at 10:00*. The former, but not the latter, makes it explicit what action is performed by the relevant utterance. As Austin observed, there might not be general conditions to determine whether an utterance is an explicit performative or not. If so, some utterances are not clear cases of explicit performatives—a difficulty if the aim is to classify speech acts, but not for us. In this paper, we will discuss cases in which performative aspects of the utterance in its context are clear.

In the next section, we will develop the details of our proposal, and we will we describe the conditions of propriety for reference-fixing performatives. We then explore some metaphysical and epistemological consequences of our view in Sect. 3, before concluding in Sect. 4.

## 2 Performative reference

Frege (1884, §74n) remarked that in order for a description to fix the reference of a name, one has to show that at least one thing is $F$, and no more than one thing is $F$. In other words, the description has to be definite. In some cases, however, speakers use singular terms to refer to something left underspecified, as in (2a), where the referent could be the type or the token car, or (2b) and (2c), with an indefinite. Utterances of this form are ubiquitous in formal and informal contexts. For example, two fundamental rules of reasoning, Universal Generalization and Existential Instantiation, require the stipulations involved in such utterances. In these cases, speakers are not required to show that no more than one thing is $F$. Other times, the referent is necessarily underspecified, as in (2d) and (2e). In these cases, speakers cannot show that no more than one thing is $F$.

    2. (a) Let us call Speedy the expensive car over there.

    (b) Take an element of the domain and call it $a$.
    (c) Let $P$ be a point in the Euclidean plane.
    (d) I call Castor one of two indiscernible spheres.
    (e) Let $i$ be a solution to $x^2 = -1$.

Ordinary speakers (including mathematicians and philosophers) are familiar with the practice of using singular terms that appear to refer uniquely to objects that are underspecified, sometimes necessarily underspecified, such as geometric points, Max Black's (1952) spheres Castor and Pollux, or the complex units $i$ and $-i$. Example (2a) shows that underspecification is a relatively ordinary phenomenon (cf. example (19) in King, 2018). Examples (2d) and (2e) show that underspecification is sometimes unavoidable. Other cases may be intermediate and depend on the context. With any of the names introduced in (2), competent speakers can carry out arguments and engage in sustained discussions that do not necessarily break down in confusion and misunderstanding.

    Thus, our ability to refer to underspecified objects (sometimes, necessarily underspecified) shows that, contrary to Frege, definite describability is not a necessary condition on reference fixing. Moreover, our ability to refer to abstract objects, as in (2c), shows that causal accessibility is not a necessary condition either. We are looking for a metasemantics of reference that works regardless of whether the referent is causally accessible or not, and definitely describable or not. In a nutshell, our proposal will be a descriptive theory of reference fixing, achieved by means of a speech act, in which we allow descriptions to be indefinite, such as *an F*.

    The received view in the metasemantics of names is a version of the causal-historical theory. According to this theory, the reference of a name $n$ is determined by previous uses within a linguistic community, tracing back to an initial baptism: a naming ceremony in which the community bestowed $n$ upon its referent. In a typical example, as (1), reference is fixed to an object that is causally related to the participants in the ceremony (Donnellan, 1970; Evans, 1973, 1982; Kripke, 1980). There are several ways to make this rough sketch more precise.

    Causal-historical theories were a major advance in our understanding of reference. However, the idea that reference has to be supported by a causal connection fails to explain how we could refer to many things which we seem to refer to: numbers like 2, properties like beauty, or abstract values like \$10. These are causally inaccessible entities, but ordinary speakers have no difficulty in using ordinary singular terms that appear to refer to them. As is well known, some causal theorists allow for reference to be fixed by a definite description (Evans, 1982; Kripke, 1980). Perhaps, reference to objects in the causal order is causally fixed, e.g. perceptually, and reference to objects outside the causal nexus is fixed by definite description. Something like this seems to be the received view.[1]

    A reason to be uncomfortable with the received view is the following. Reference is commonly regarded as something like a linguistic natural kind. There is no reason

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[1] Reference is often understood as the linguistic side of singular thought. A reasonable consideration is to try and keep (singular) reference and singular thought as closely tied as possible, although "split views" are possible. Here we focus on language, not on thought, but our attitude is sympathetic to the 'liberalism' of Hawthorne and Manley (2012), who do not impose demanding causal or acquaintance conditions on singular thought. We advocate a metasemantics of reference that is similarly undemanding.

to think that reference is a disjunctive concept, like *jade*. Indeed there is no evidence, linguistic or cognitive, to suppose that there are two kinds of reference depending on whether the referent is causally accessible. Babies do not learn two rules for using names, and no human language has two categories of expressions: the names used to refer to causally accessible entities and the names used to refer to causally inaccessible entities. So there should be a single account of the reference relation that works across the material/abstract objects divide.[2]

Building toward our account, we begin with some observations due to J. L. Austin: speech acts can fix reference, since they can institute conventions for the use of names.

> 'I name this ship the *Queen Elizabeth*' – as uttered when smashing the bottle against the stem. (Austin, 1962, p. 5)

The utterance stipulates, in the intentions of the speaker, that *Queen Elizabeth* is to refer to a particular ship and, if conditions are satisfied, a convention for the use of *Queen Elizabeth* comes into effect as a consequence of the speech act.

Our proposal can be stated as the conjunction of two claims. The first captures the pragmatic and social nature of performative reference fixing, and the second covers all apparent cases of reference fixing that speech acts can license. Consequently, the resulting account is non-disjunctive—as we shall argue in Sect. 3.

> **Reference is performative**. The relation of reference is stipulated to exist by a successful performative utterance, i.e., a speech act by means of which a speaker invites the hearer to refer to something by means of a proper name.

> **Reference is fixed by choice**. The referent of a name is chosen from a (typically, restricted) set of candidates, in compliance with the requirements imposed by the speaker.

Some examples of reference fixing performatives are typical utterances, in the proper context, of the sentences in (2), or of the following:

3. (a) I name this ship the *Queen Elizabeth*.
   (b) We shall call 0 the number of all classes equinumerous with the concept *not identical to itself*.
   (c) Let Castor be one of two indiscernible spheres.

Sentences such as these, or variants thereof, are familiar. The examples in (3) differ in various ways, but they all exhibit the same structure. For example, while the ship in (3a) is presumably perceptually salient, as suggested by the demonstrative *this*, the number 0 is not causally accessible in the context of (3b), or indeed in any context. And while there is a property that distinguishes 0 from anything else, sometimes there is no property that distinguishes the referent from something else, as for (3c).

On our account, reference facts about a name *n* are not explained by appealing to the speaker's acceptance of truths about *n* that are 'analytic' or 'constitutive' of the use of

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[2] Perhaps the same relation of reference has multiple distinct grounds, but such view strikes us as falling short of a natural generalization, and we are not aware of this view being defended in press. Arguably, a multiple-realizability view is not shared by authors such as Kripke (1980), for whom talk of reference fixing, whether by baptism or by description, seems to underlie some kind of speech act that establishes the referring convention.

*n* (as suggested, for example, by Horwich, 2005); nor do we appeal to the psychology of speakers who can 'single out' the referent (Evans, 1982); nor to a stipulation about the term *reference*, as a deflationist does (McGee, 2005)[3]; nor to the 'magnetism' of parts of nature (Sider, 2011); nor, finally, to unknowable 'brute facts' (Breckenridge & Magidor, 2012).

On our view, performative reference is a social construct, metaphysically on a par with other relations that can be stipulated to exist by a speech act, like bets, apologies, or marriages. Reference is best explained by the institution and mutual acceptance of a web of norms. An explanatory account of reference is thus similar to an explanatory account of bets, apologies, and marriages: causal or cognitive conditions may or may not obtain, to help speakers coordinate on a referent, but they aren't in general necessary, as we shall argue in more detail in Sect. 3.

Perhaps performative reference is not an interesting concept. It might be argued, for example, that in an utterance of *Let n refer to x*, all the "action", so to speak, is in the act of referring that is implicit in the use of *n*. To put the point in Austinian terms, performative reference is a form of explicit reference, as we mentioned, which can be contrasted to something we might call "primary reference": intuitively, a speaker can refer by explicit stipulation, or by just using the name. Suppose that explicit reference is necessarily derivative relative to primary referential acts. If so, performative reference would be somewhat uninteresting.

There is a subtle equivocation in this critical remark. The idea that a naming convention can be established by a performative speech act does presuppose that the minds of speakers are intentional devices: it couldn't be otherwise. However, it does not presuppose that a naming convention already exists to pick out the referent. Intentionality is manifest in those cases of reference fixing in which the choice of the interlocutors is guided by perception or acquaintance, such as our example (1), but it is arguably present in all cases of reference fixing, even when the choice is less constrained. In mental soliloquy, for example, a speaker can label an object of their imagination by stipulation—and this requires intentional abilities but not a prior referring term. Thus, performative reference does depend on "primary reference", if by this we mean to invoke the mind's intentional capacities. How to explain intentionality is notoriously hard, and we will not try to. Our thesis is that, if the interlocutors have minds with the capacity to refer, a naming convention does not require more than their participation in certain successful performative utterances. In particular, it does not require causal or acquaintance-like constraints, nor magnetism, nor definite definability. And this thesis is not uninteresting.

## 2.1 Pragmatics of performative reference

We now describe in more detail how the theory works. Performative acts of reference are utterances of sentences of the form:

$$\text{LET}(n, \exists x F)$$

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[3] To foreclose a possible misunderstanding: according to our account, reference is a stipulation, but one about a name, not about the word *reference* For the deflationist, it is the other way around (McGee, 2005).

The main function of these formulas is to stipulate that *n* refers: reference is done by pronouncing it done. In the formula, we distinguish:

(i) a term *n* whose referent is fixed by the speech act;
(ii) an operator LET that is used to issue an imperative;
(iii) a descriptive clause $\exists x F$ to which *n* is tagged.

Common linguistic realization of LET are (in English): *Let*, *I (hereby) name*, *I shall call*, and so on. Since LET is the main sentential operator in the formula, and LET is an imperative operator, the formula does not have a truth value. The formula expresses a request that the addressee may satisfy or not. The force of the request may be that of commands (*Call me Mina*), or of permissions (*You may call me Mina*), depending on the context.

The descriptive clause $\exists x F$ is a complex expression such as *a dog* or *the number of such-and-such classes*. Its semantic interpretation makes a particular set salient. It is the set of candidate referents for *n*: in (1), the set of dogs that the speaker took home from the shelter (a singleton set), and in (2c) the set of points in the Euclidean plane. The performative operator then instructs the interlocutors to select some member of the set of candidate referents as the referent of *n*. Importantly, the quantificational force of the descriptive clause can be definite (*the smallest prime number*) or indefinite (*a prime number*).

Indefinites such as *a prime number* may receive an existential or a referential reading (Coppock & Beaver, 2015; Szabó, 2000). A speaker may use *P* in (4b) to refer to some point, but no point in particular. This is the existential reading, in which the referent is underspecified. In contrast, a follow-up such as (4a) makes a specific point salient for interpretation. This is the referential reading, in which the referent is specified. Let P be a point in the Euclidean plane,

4. (a)  ... that belongs to line *a* and to line *b*.
   (b)  ... that does not fall on line *a*.

If the referent is specified, choice of referent is trivial, since the set of candidate referents is just a singleton (such as, in (4a), the set of points that belong to both *a* and *b*). Indefinites in this case behave exactly like definites, as far as reference fixing goes. However, it is not the case that any degree of specificity makes the choice of referent trivial, as (4b) shows.[4]

By choice, names can be tagged to unspecific indefinites, thereby achieving the level of generality that is needed in order to account for all the examples we have considered, within a non-disjunctive theory. More formally, consider a model $M = (D, \llbracket \cdot \rrbracket^{c,g}, f)$ with *D* a domain, $\llbracket \cdot \rrbracket^{c,g}$ the interpretation function relative to a context *c* and a variable assignment *g*, and *f* a choice function that takes a non-empty subset of the domain and returns one of its elements.[5] With these primitives, the link between the metasemantic

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[4] The language of "choices" has odd voluntaristic overtones, which we disavow. We kindly ask the reader not to dwell on that. Sometimes we rely on the alternative language of "selection" of a referent. This is more impersonal, but has an equally odd mechanistic overtone that we find equally inappropriate.

[5] In symbols, $f : \{\wp D - \varnothing\} \mapsto D$ such that for all $d \in \wp D$, $f(d) \in d$. An alternative formulation that avoids choice functions in the metalanguage is in terms of Hilbert's $\epsilon$ operator. We will discuss no issue that force us to choose between these two. The use of choice functions, or of Hilbert's $\epsilon$, in the theory of

level (the speech act) and the semantic level (the interpretation of a proper name) may be stated in very simple terms by what we call Performative Reference Principle (PRP). Relative to a reference fixing context $c$, and assuming that the utterance of a formula LET$(n, \exists x F)$ is salient to the interlocutors,

$$[\![n]\!]^{c,g} := f([\![F]\!]^{c,g}) \qquad\qquad \text{(PRP)}$$

PRP states that the semantic value of $n$ is an arbitrarily selected member of the set of candidate referents expressed by the predicate in the descriptive clause $\exists x F$, relative to the context.[6]

Speakers may leave things underspecified for various reasons: perhaps they don't have or can't have more information about the referent, or perhaps they just don't care to be more specific. There are cognitive constraints: the finest degree of specificity requires a lot of effort. Still, PRP fixes reference despite various degrees of unspecificity. Next, we consider cases in which PRP does *not* fix reference.

## 2.2 Success and effectiveness

As for any performative act, acts of reference fixing are subject to conditions of success. If one says *I do* to oneself in the mirror, one fails to marry.

We take an act of reference fixing to be *successful* if (A) there are candidate referents. We take it to be *effective* if (B) it is meaning-constitutive, or provides an understanding of the newly introduced term. This important distinction is due to Ebert (2016, §7.4).

Let us start with (A). Assuming at least one candidate referent exists (otherwise there is nothing to choose), then once a choice of referent is made, we must acknowledge that the name has been bestowed on a referent. After all, this is what the speaker requested in the course of the conversation, and if the conversation continues its course without hiccups, it is presumably because the request has been satisfied.

Following Austin, we say that if (A) fails, the utterance is a *misfire* (Austin, 1962, pp. 20, 36, 51): the performative act is attempted but 'void', as Austin puts it. However, (A) is not sufficient. There are additional success conditions that we won't discuss in detail: that speaker and hearer are cooperative; that the speaker intends to refer; and the hearer recognizes her intention; that they are consciously aware of each other's

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Footnote 5 continued

reference, is very practical, and has some support. For an interesting discussion of logicality, see Woods (2014). Leitgeb (2023) develops an account of semantic indeterminacy within classical logic by means of Hilbert's $\epsilon$ operator.

[6] There is some disagreement about the semantics of names, and of definite and indefinite clauses. We have tried to formulate the metasemantics of reference in the broadest possible terms, so that our account may be compatible with different theories in semantics. Accordingly, there are slightly different versions of our theory, depending on the details of different semantic theories of names and descriptions. We aim to be inclusive here, and so we do not spell out the details. Very briefly, we simply mention indefinite or underspecified cases involving anaphoric (i.e. discourse-bound) variable interpretation. For example, (*i*) seems analogous to the indefinite reference cases that we have considered.

(*i*)  In every town, there is a queen; call her Ann. Ann is usually very powerful and well respected.

Given that the terms featuring in indefinite reference-fixing stipulations are genuine names, our account is compatible with the claim that *Ann* in (*i*) is a genuine name too (Bach, 2017; Fara, 2015; Geurts, 1997).

actions; and so on. If one of these additional conditions besides (A) fails, the utterance is an *abuse* (Austin, 1962, p. 16). To use Austin's example, when I say 'I promise' with no intention of keeping my word, I have promised but I have abused the procedure. In that case, the utterance is, according to Austin, 'hollow'.

If (A) fails, the set of candidate referents is empty. Hence, the choice function is undefined. An example is the attempted stipulation in (5):

5. *Santa* refers to the benevolent old man who lives at the North Pole, brings presents for Christmas, and drinks Coca-Cola.

Failing (A), by PRP, *Santa* fails to refer even if (5) is uttered by a non-abusing speaker and accepted in good faith by the interlocutors. In this respect, names introduced by performatives are similar to pronouns or Strawsonian descriptions, since they carry a presupposition that a referent exists (Strawson, 1950; van Der Sandt, 1992), in the familiar sense that if the presupposition is false, reference fails. This result is derived from the conditions for success of a speech act of reference fixing.

Condition (B) is intended to capture circumstances in which the attempted stipulation is useful, in some sense or another, despite the possible failure of (A). For example, the stipulative definition of *Jack the Ripper* in terms of *Let Jack the Ripper be the perpetrator of the Whitechapel murders* is effective, in the sense of issuing a common understanding of *Jack the Ripper*. However, the effectiveness of the definition does not ensure that there was indeed a unique murderer who was responsible for the 1890s slayings of the sex-workers in London. Another important example is Frege's famous Basic Law V, which is effective, since it introduces the concept of being an extension of a concept, but is not successful. A somewhat different example is:

6. Let *n* be a prime number greater than all other prime numbers.

In (6), *n* does not refer, due to the failure of (A). Interestingly, however, the speaker and the addressee may still play along: (B) need not fail right away. The speaker or the addressee may play along for the sake of the proof, or due to their ignorance. Even for skilful logicians, *reductio* proofs involve a kind of pretense (Novaes, 2016), whose purpose is to show that the extension of the relevant predicate is empty. A performative act of reference in which (A) fails but (B) doesn't can be taken to be an effective (albeit unsuccessful) stipulation.

This last comment may suggest that performative reference is akin to the view that reference is a kind of pretence: a sort of fictionalism about the reference relation. This is not so. Our view encourages a 'thin' conception of reference: there is no more to reference than the speakers' participation in certain successful performative utterances, and for the referent to exist. However, "thinness" does not mean non-existence. The analogy is with other social practices instituted by speech acts: bets, apologies, and marriages. We do not, for this reason, think that the reference relation does not exist, as the fictionalist does, anymore than we think that bets, apologies, and marriages do not exist.[7]

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[7] Given that fictional characters are abstract entities, our theory provides a handle on our reference to them. There is no more to our reference to, for example, Hamlet than immersing in a successful speech act. We can refer to Hamlet as an abstract fictional character, but not to Hamlet as the prince of Denmark, since what exists is the abstract entity, and not, as some Meinongians hold, the person. The distinction has been argued for by Kripke (2013).

We have now laid out the theory of performative reference in sufficient detail. In the next section we explore its consequences, and address some objections.

## 3 Metaphysics and epistemology

From a broader perspective, the job of singular terms in the cognitive life of linguistic agents is that of tokens for keeping track of objects in discourse, following Jeshion (2009) and Dickie (2015). People stipulate the meaning of names because it serves their cognitive purposes. This job can be done by a linguistic expression $n$ through the institution of a practice whereby $n$ is used to flag a unique object in discourse, even though the interlocutors may lack causal access to it, or the ability to have it "in mind", or to describe it uniquely, or to recognize it in a mugshot. In this sense, performative reference is relatively undemanding. In addition, consideration of the examples above supports our claim that performative reference is, in some sense, universal: within the scope of LET, everything (that exists) can be referred to, including causally inaccessible or indiscernible objects. We now address some worries that might be raised by the account.

### 3.1 Arbitrary reference

Consider (7a) and (7b):

7. (a) Let *Tom* refer to an average British soldier.
   (b) Let Bob be a resident of New York.

The speaker of (7a) and (7b) is plausibly leaving things unspecified, in cases of so-called 'arbitrary reference'. The notion of arbitrary reference is sometimes invoked in our understanding of hypothetical or quantificational reasoning. Performative reference allows for a relatively undemanding way of understanding it.

We take the speaker of (7a) and (7b) to be intending to refer to an ordinary soldier and to an ordinary NY resident, and not to arbitrary objects in the sense of Fine (1983) or Horsten (2019). On our account, the names refer to an ordinary soldier and an ordinary NY resident who are unspecified, rather than to arbitrary objects.

Underspecification is a way of understanding the arbitrariness in uses of names such as *Tom* and *Bob* in the contexts of (7a) and (7b). Interlocutors select a referent arbitrarily from the set of average British soldiers, and from the set of residents of NY, respectively. Singular terms used unspecifically correspond closely to the parameters of formal logic (Shapiro, 2008, 2012).

Are they constants or are they variables? On the one hand, Pettigrew (2008) defends the "Skolemite" view that parameters are variables. On the other hand, Breckenridge and Magidor (2012) defend the view that parameters are individual constants, except that we can't *know* what they refer to. We think that the constants-or-variables question is a false dilemma, and that we don't need to fall hard on one or the other side of it. Although it is useful to formalize natural phenomena, such as reference, in the well understood mold of first-order logic, we don't think we should force proper names to be either variables or constants: that would do violence to the complexity of reference

in natural language. We expect that in the best semantic theory for proper names (whatever that is), they'll end up exhibiting features of both formal devices.

We have said that *Tom* refers to a British soldier, and we agree with Breckenridge and Magidor (2012, p. 377) that "we do not and cannot know" who it is. If one asks *Which British soldier is Tom?*, cases in which *Tom* is used to refer arbitrarily are cases in which there is no answer. However, we disagree with Breckenridge and Magidor's claim that there is a (brute) fact of the matter about who Tom is, which is unknowable to us. Rather, we think there is no fact of the matter. As Woods (2014) puts it:

> it is essential to understanding an indefinite expression ... that we recognize that its value really is arbitrary in the sense that facts about the domain do not determine [what] it denotes. (p. 290)

On our account, *Tom* refers to whoever the interlocutors choose among the British soldiers, and no fact about who Tom is exists prior to or independently of their choice. For many purposes, the interlocutors might not even choose the same referent from the set of referential candidates. The conversation continues without incidents so long as they all have chosen any British soldier. For example, if we want to talk about the average salary of a British soldier, we can introduce *Tom* to refer to a British soldier, and so long as the conversation remains at a level of generality that applies to all British soldiers, it does not matter which British soldier the interlocutors pick for the conversation to continue. In this case, there is no fact of the matter concerning who Tom is, and so there is nothing to know or fail to know. There is at least some British soldier that *Tom* refers to and, for the purposes of that conversation, that's enough.

### 3.2 The "semantic axiom of choice"

According to Robert Brandom, the possibility of referring by choice, tagging a name to an underspecified indefinite description,

> seems to require commitment to a substantive and (so) potentially controversial *semantic axiom of choice* that stipulates that one can label arbitrary distinguishable objects. One would then naturally want to inquire into the warrant for such a postulate. Going down this road seems needlessly to multiply the possibilities for metaphysical puzzlement (Brandom, 1996, p. 314).[8]

We think that, just like the Axiom of Choice in set theory, initial metaphysical puzzlement does not survive further reflection.

One way to think about how reference fixing works, according to performative reference, is to consider variable assignments, familiar from the semantics of first-order logic. A variable assignment on a signature $L$ is the simultaneous assignment of elements of the domain to all variables in $L$, one element for each variable. The assignment is relative to an interpretation, but is otherwise arbitrary. The request made

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[8] See Brandom (1996, pp. 313–314). Brandom calls 'distinguishable' objects that are counterexamples to the Identity of Indiscernibles: any things that have the same properties but are numerically distinct. Examples are the points on the Euclidean plane, Max Black's spheres, and $i$ and $-i$. Our view accounts for underspecification, whether necessary or contingent.

by a speaker who performs an act of reference fixing is to assign an element of the set of candidate referents to a singular term. The assignment is relative to the interpretation of the descriptive clause, but is otherwise arbitrary. There are differences: in a reference fixing act, we are not dealing with all variables of the language simultaneously, but only with one term, and we are not considering the whole domain of the model but (typically) only a subset of it, namely the set of candidate referents. However, if variable assignments are not metaphysically puzzling, arbitrary choice of a referent is not puzzling either.

The analogy between variable assignments and metasemantic choice may be probed further. One could take an instrumentalist view of variable assignments as useful modeling devices to account for generality in a compositional way, without thereby assuming that speakers perform any cognitive procedure that even remotely resembles a variable assignment. We do not wish to reject this view. In a similar fashion, one could take an instrumentalist view of our pragmatic choice function. Variable assignments and choice functions are instrumentally justified, on this view, on grounds of descriptive empirical adequacy, but not of their cognitive plausibility. In both cases, instrumentalism leaves the cognitive question unanswered about what speakers' underlying mental processes are.

Some resistance against metasemantic choice might come from a specific view of how the mind works. Semantic principles, and principles of interpretation such as PRP, are presumably computed by language users at least at some level. Suppose that mental operations follow rules or procedures for computing outputs given inputs. PRP does not specify any cognitive process that competent speakers might go through to understand the utterance of *Let 'n' be an F*. An interpreter cannot, by an application of a rule, determine the referent of a term *n* tagged to *an F*. It seems incoherent to suppose that an interpreter picks a referent, and that there is no procedure or rule she follows in doing so.

However, it is controversial to assume that the mind operates by making connections that are specifiable as rules. Speakers follow all sorts of heuristic principles in the interpretation of speech, which we as theorists might not have a better shot at describing than by resorting to powerful mathematical tools such as choice functions in the metalanguage. It is likely that the mind operates by making connections that are at best describable only as functions. Moreover, even if the notion of a rule for arbitrary choice appears to make little sense, there should be no skepticism about choice functions. Once one regards a metasemantic choice function as a set of inputs and outputs pairs, the extensional adequacy of PRP does not seem to raise any further suspicion of incoherence.

Alternatively, one could argue against choice on the ground that one has to have intentions towards an object in order to choose it among others. If the choice is (necessarily) underspecified, an interpreter who is given a set of alternatives may not be able to form the requisite intentions, undermining PRP.

This consideration is not compelling, for it cannot be seriously denied that we have the cognitive ability to select an option even when nothing singles out any alternative. One can take a blind guess. Or, suppose I promise you $100 if you pick an apple from a basket. We may suppose that the apples are indiscernible. Still, one forms the requisite intention and picks an apple. It could be argued that the apples are discernible after

all, since they occupy different regions of space. So I promise you $100 if you pick a point on the surface of a sphere centered on you, with a 3 ms radius. Suppose moreover that you are the center of the coordinate system. Then, all points on the surface of the sphere are equidistant from you, and nothing sets one apart from any other. In this scenario, anyone would pick any point and make $100 (with the possible exception of Buridan's ass): it's enough to lift a finger and pick a point. The claim that intentions require discernibility is too strong.

In conversation, it is not financial reward that makes a choice rational but good interlocutorship: if the speaker requests us to make a choice, we comply, so long as we believe that we can, expecting to reap the benefits of cooperativity.

### 3.3 On knowing which

If reference is fixed by choice, a speaker who uses $n$ to refer to an object $x$ is not, in general, in a position to know that $n$ refers to $x$. Therefore, it is possible that a speaker $S$ is competent with the use of $n$, and yet $S$ does not know which object $n$ refers to. To see why, consider (8).

8. Let $i$ be one of the roots of $-1$.

We claim that it is possible for a competent speaker $S$ to use $i$ to refer, even though $S$ does not know which object $i$ refers to, of the two roots of $-1$. By PRP, if the stipulation in (8) is successful, $i$ is assigned to either $(0, 1)$ or $(0, -1)$.[9] If $S$ knows which root of $-1$ $i$ refers to, then either $S$ knows that $i$ refers to $(0, 1)$, or $S$ knows that $i$ refers to $(0, -1)$. Nobody however, not even the most gifted mathematician, knows that $i$ refers to either number. Indeed, the question *Which root of $-$ are you referring to by your use of $i$?* prompts a smirk at best. We solve the apparent puzzle by denying that competence with a name requires "knowledge which".

This claim is controversial. According to Gareth Evans, for reference to obtain "the subject must have the capacity to distinguish the object of his judgement from all other things" (1982, p. 89). Others have argued that for a name $n$ to refer to $x$, a competent speaker using $n$ must be, or have been, '*en rapport*' with $x$, or 'acquainted' with $x$, or more generally must satisfy some epistemically demanding condition.

Epistemically demanding conditions on reference do not fare well, on account of Kripke's (1980) celebrated epistemic argument against descriptivism and its consequences. Many speakers are competent users of the name *Feynman*, although they could not tell who Feynman is. Other failures of knowledge-which requirements are familiar from the philosophical literature on so-called 'descriptive names', such as Kripke's (1980) *Neptune* and Evans's (1982) *Julius*. Compelling arguments against knowledge-which requirements on reference are found in Hawthorne and Manley (2012, Part 1) and Jeshion (2009).

Evans's strategy in *The Varieties of Reference* is a retreat. Epistemic demands are not necessary for semantic competence with names, in general. However, Evans argues

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[9] We are exploiting the standard embedding of complex numbers into the reals. It gives us a way, in the metalanguage, to name the roots of $-1$ unambiguously. Complex numbers can be represented by pairs of reals, the pair $(a, b)$ representing the complex number $a + bi$. On disagreement about the semantic status of $i$ in the philosophy of mathematics, see Shapiro (2008).

that the particular kind of speakers who initiate a convention about the use of a name must satisfy an epistemically demanding condition. For example, at least Feynman's parents must know which person *Feynman* refers to, in order to bestow *Feynman* on that person. Thus, the condition seems intuitively motivated at least for 'producers' of referential relations—to use Dickie's (2011) terminology.

It appears to follow that, if someone attaches two names $t_1$ and $t_2$ to the same referent, such producer must know that the names are co-referential, for she must know which object $t_1$ refers to, and which object $t_2$ refers to. This consequence of Evans's view is still too strong.[10]

As is well known, Black (1952) attached *Castor* to one of his indiscernible spheres, and *Pollux* to the other. Suppose Black fixed reference by uttering (3c), reported here as (9):

9. Let Castor be one of two indiscernible spheres.

Suppose that a previously unknown manuscript by Black has been found recently. In this unpublished paper, Black continued his discussion of indiscernibility, adding many insights and intelligent arguments. In this paper, he called *Romulus* one of the spheres and *Remus* the other, for no other reason than to help his readers not get confused about which claims he made in the two papers. Given a successful stipulation about *Romulus*, parallel to (9), *Romulus* co-refers either with *Castor* or with *Pollux*. A knowledge-which requirement on producers of reference entails that either Black knows that *Romulus* co-refers with *Castor*, or that he knows that *Romulus* co-refers with *Pollux*. If the latter, then Black knows that *Romulus* does not co-refer with *Castor*. Either way, Black knows whether *Romulus* co-refers with *Castor*. Therefore, Black knows whether Romulus is Castor. This is implausible.

One could deny that *Romulus* refers. But it is difficult to hold that reference fails in Black's later paper and not in his earlier (and actual) paper. It follows that Black's paper is replete with truth-valueless statements. Perhaps this is not a cost: there might be a lot of nonsense in metaphysics after all. However, the example is structurally analogous to other areas of inquiry, including complex analysis and geometry, which it would be unwise to dismiss as nonsense. Mathematicians attach $i$ to one of the roots of $-1$, and $-i$ to the other, and speak freely of this or that point on the plane. Knowledge-which requirements threaten to make nonsense of highly valuable inquiry, including in metaphysics, complex analysis, and geometry. This is a high theoretical cost.

The appeal to indiscernibility strengthens the case, since the claim that Black knows or fails to know that Romulus is Castor sounds rather outlandish. However, the argument does not essentially depend on the indiscernibility of Black's spheres, but on the familiar consideration that semantic competence does not yield knowledge of true identities. The consideration is familiar from the vast (and not presently summarizable) discussion of Frege's argument in 'Sense and Reference' (1892). It is not incoherent

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[10] As pointed out by a reviewer, there might also be an interpretation of Evans-style knowing-which requirements according to which a reference producer knows which object $t_1$ refers to (in some sense) and knows which object $t_2$ refers to (in some sense), but does not thereby know whether $t_1 = t_2$. Such a "weak" understanding of knowing-which requirements would appear to be compatible with our view.

to suppose that a Babylonian astronomer named Hesperus, and later named Phosphorus, and thus named the same object twice without thereby knowing that Hesperus is Phosphorus. Since there is no knowledge-which requirement even on reference producers, one need not make implausible claims about Black's epistemic state, nor about the Babylonians' astronomic knowledge. We conclude by rejecting Evans-style knowledge-which requirement on reference.

The degree to which descriptions single out an object may be relative to the goals of the conversation, even when the description is definite and so there is no (non-trivial) arbitrary choice to make. We regard reference as a kind of coordination among interlocutors who participate in a successful speech act, whose purpose is to keep track of objects over the course of a conversation. The highest degree of precision is often not needed for this task, even in mathematics. Sometimes we refer without knowing which object we refer to.

### 3.4 Indeterminacy

Metasemantic choice has further interesting consequences. Consider (7b) again:

 (7b)  Let Bob be a resident of New York.

Suppose that Jim and Kim are competent interlocutors who understand a successful utterance of (7b) and interpret it correctly. Suppose that the speaker is unspecific: there is one referent but none in particular. It is consistent with PRP that Jim selects $a$ as the referent of *Bob*, while Kim selects $b$, where $a$ and $b$ are distinct NY residents. In this case, despite participating in the same speech act, Jim and Kim's uses of *Bob* are not co-referential. This is potentially puzzling: Jim and Kim might not understand each other when talking about Bob, despite participating in the same act of reference fixing. We mentioned a similar scenario in the discussion of Tom the British soldier, in order to deny that there is a fact of the matter as to what *Tom* refers to that we might know or be ignorant of.

If Jim and Kim pick out different referents, we will say that they are unlucky.[11] Let us say that a condition $C$ is determinate if and only if, necessarily for any $x$ in the relevant domain, if the sufficient conditions for $C(x)$ obtain, $C(x)$ determinately obtains. Determinate conditions are unperturbed by chance. The tossing of a coin is sufficient for the coin to land heads, but it is not determinately the case that the coin lands heads. If it does, that's lucky. On the theory of performative reference, co-reference is not determinate, because while its sufficient condition is that reference be fixed, it is sometimes a matter of luck whether speakers who use the same name refer to the same object.

According to many philosophers, a singular term $n$ refers only if, given the relevant features of its use, together with the relevant facts, there is an object $x$ such that it is determinately the case that $n$ refers to $x$. In the above case, it is not determinately the case that Jim and Kim refer to the same NY resident by their use of *Bob*. However, since the same features of the use of *Bob* are shared by Jim and Kim and the underlying

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[11] As we mentioned in the Tom case, being unlucky might not have significant consequences, if the purpose is to talk about statistical generalizations or averages that hold of the entire class of candidate referents. The notion of luck is related to an analogous notion in epistemology, and borrowed from Dickie (2015, §2.1).

facts are the same, it would seem to follow that *Bob* does not refer, in the given circumstances.

There are different arguments for indeterminacy of reference: the permutation argument (Benacerraf, 1965; Putnam, 1981), and the argument from what is known as the Problem of the Many (McGee, 1997; Unger, 1980) are prominent.[12] These arguments rest on the following claim:

> There isn't anything in my linguistic usage or in the linguistic usage of my speech community that picks out a unique individual as the thing I refer to ... this is so even if we allow the thoughts we express by employing a word count as part of its "usage," and even if we allow "usage" to take account of causal connections between our words and our environment. (McGee, 2005, pp. 409–410)

Following McGee (2005), there are two ways of expressing (in-)determinacy of reference:

(i) *de dicto*: It is determinately the case that there is a unique object to which *n* refers.
(ii) *de re*: There is a unique object of which it is determinately the case that *n* refers to it.

According to McGee, arguments for indeterminacy of reference rule out (ii), but leave (i) undisturbed. We remain agnostic on the soundness of arguments for the indeterminacy of reference.

In our view, in the context of (7b), there is something to which *Bob* refers. This is where our theory overlaps with Breckenridge and Magidor's account of arbitrary reference. Thus, in the sense of (i), determinately, there is something to which *Bob* refers. However, that does not entail (ii): there is something of which it is determinate that it is the referent of *Bob*. On this, our theory diverges from Breckenridge and Magidor's, since on our view, there is nothing of which it is determinate that it is the referent of *Bob*: there is nothing in our use of *Bob*, as far as it is encoded in the relevant stipulation, that could be used to uniquely determine a referent for it. In Breckenridge and Magidor's theory of arbitrary reference, by contrast, reference is a primitive relation that is not answerable to facts concerning use, generously construed. It follows that co-reference facts are also determined.

On our account, relative to each interlocutor's use of *Bob*, the term may refer to a different NY resident. This follows from the observation that a pragmatic choice (modeled by the choice function) is assumed to be performed by each interlocutors. Relative to each choice function, *Bob* may refer to a different NY resident. A question concerning the height or weight of any particular resident depends on the particular output of a choice function. But there is no particular object that is the value of all choice functions whose input is *Bob*. In this sense, there are no facts of the matter, across all interpretations, as to whether Bob is 6 inches tall, or fat.

On our account, there are no metasemantic facts that explain an addressee's choice of referent, besides the fact of their participation in a successful speech act. A strength of our account is that this approach works with unspecific referents, as we have

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[12] For a rich discussion on how these arguments can be taken to induce referential indeterminacy, and on how the two arguments differ, see McGee (2005). For our purposes here, it does not matter what the argument for establishing referential indeterminacy is.

argued above, and can be extended straightforwardly to a case which involves multiple addressees, as Jim and Kim in the *Bob* example. Of course, any weaknesses of our accounts for the 1-speaker/1-addressee case carry over to conversations with several participants.[13]

It is important to emphasize that a referential practice about the use of a term is a regularity built over time. Sometimes, information can be provided, in due course, to determine which object is the referent of a name, if any. Perhaps, a story about Bob follows after the utterance of (7b): *He lives in Queens and enjoys coffee from the bodega around the corner*. With more information, interlocutors may focus on a smaller and smaller set of candidate referents, perhaps eventually a unique shared referent, thus fulfilling the communicative function of canonical singular terms.

Should the interlocutors manage to go through sustained inquiry, without falling into disagreement and misunderstanding, they would then have strong evidence that they are, indeed, referring to the same object. That is, they were lucky. If, instead, two uses of a name do not pick out the same object, chances are that the communication flow will sooner or later break down, and result in disagreement and misunderstanding. The interlocutors have been unlucky if their practice does not survive inquiry. While there is no *a priori* guarantee of sameness of reference, there may be indirect evidence for it, accumulated over time.

Sometimes, there can be no additional information to single out a unique shared referent, for no amount of information and reflection separates indiscernible candidate referents. This does not undermine the practice of naming, however, so long as the discourse is coherent, fulfills its purposes, and misunderstandings and disagreements do not force conversational breakdowns. In these cases, co-reference is unlikely to obtain (or, as in the use of $i$, it obtains with 0.5 probability), but it doesn't follow that features of the use of expressions such as $i$ fail to show that these are names. These expressions have the same logical, semantic, and syntactic properties of ordinary names. Just because a referent is randomly assigned to a term $n$, it doesn't follow that $n$ is not a name.

## 4 Conclusion

Performative reference constructions are abundant in ordinary conversations, as well as in mathematical and scientific discourse. This paper is an attempt to articulate a speech-act theoretic account of the metasemantics of the reference of the names involved. It argues that the reference relation is established by a performative speech act of stipulation. Speakers can select a referent randomly, if necessary, motivated by the incentive to coordinate on the use of a name to keep track of an object in discourse.

We have argued that our view accounts for so-called arbitrary reference, avoiding the postulation of both arbitrary objects and necessarily unknowable brute facts. We have also rejected knowledge-which requirements on reference, and defended the thesis that co-reference might not determinately obtain despite reference obtaining. This account makes sense of ordinary speakers' referential practices, including philosophers and

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[13] Thanks to an anonymous reviewer for prompting us to clarify this point.

mathematicians, who appear to be very liberal and unimpressed by skepticism toward causally inert or epistemically indiscernible objects.

## Declarations

**Conflict of interest** The authors declare no conflicts of interest.

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