



Demonstrations as actions

Tadeusz Ciecierski¹ · Piotr Tomasz Makowski²

Received: 19 January 2022 / Accepted: 17 October 2022 / Published online: 5 November 2022
© The Author(s) 2022

Abstract

This paper presents a dual intention model (DIM) of demonstrations as actions to show the agentive nature of demonstrations. According to the DIM, demonstrations are complex actions that contain as components at least three elements: an abductive intention, a deictic intention, and a basic ostensive act of indication. This paper unpacks these three components and discusses their roles from the viewpoint of the philosophy of action and the philosophy of language. It also shows how the DIM applies in selected practical examples and explains the merits of the model in the context of other views on demonstrations and demonstratives.

Keywords Dmonstratives · Demonstrations · Indexicals · Intentions · Actions · Abduction

1 Introduction

Consider the following four situations:

- [S1] Someone utters *This is beautiful* and points to a painting in a gallery.
- [S2] Someone utters the sentence *John can speak only THIS loud*, imitating John's volume of voice (cf. Levinson, 1983, p. 587).¹
- [S3] Someone utters the sentence—*That fish was yea big*—in language L, which differs from English only in containing the expression *yea*, which conventionally refers to the distance between the hands of the speaker (cf. Perry, 1997). While uttering the expression, the speaker is making a suitable gesture.

¹ The original example of Levinson makes use of 'that' instead of 'this'. The latter demonstrative fits the idea behind the example better.

✉ Tadeusz Ciecierski
taci@uw.edu.pl
Piotr Tomasz Makowski
pmakowski@wz.uw.edu.pl

¹ Faculty of Philosophy, University of Warsaw, Krakowskie Przedmiescie 3, 00927 Warsaw, Poland

² Faculty of Management, University of Warsaw, Ul. Szturmowa 1/3, 02678 Warsaw, Poland

[S4] Someone utters the sentence: *I wish this would stop*, doing nothing else and implying that the hearer knows what entity (a noise, for instance) she is referring to—for example, there is only one noise disturbing the conversation (cf. Textor, 2007).

In situations [S1], [S2], and [S3], different actions assume the role of demonstrations. In [S1] it is a pointing gesture, in [S2] it is a certain way of using the voice, and in [S3] it is a conventional gesture associated with a specific expression. Interestingly, in situations [S2] and [S3], the demonstrations are constitutive of the fact that particular objects are demonstrata, i.e. had the demonstrations been different, the demonstrata (the loudness of speaking and the distance indicated) would have differed, too. This can be explained by observing that in [S2] and [S3], the objects demonstrated (the loudness and the distance) are also properties of the demonstrations themselves, which results in an interesting case of reflexivity. In situation [S4], there is also a demonstration, broadly conceived, albeit *prima facie* the utterer is not performing any action save uttering the sentence.

There are a number of serious theoretical motivations for developing a novel theory of demonstrations and the corresponding uses of demonstratives. First, in the enormous philosophical literature regarding demonstrative utterances, surprisingly little attention has been paid to the agentive nature of demonstrations.² In fact some approaches even go so far that they treat the agentive dimension of demonstrations as inessential. In *Demonstratives*, for instance, Kaplan sketches a Fregean theory of demonstrations³. According to Kaplan, the essence of demonstrations is that they present individuals (demonstrata) in a particular manner (Kaplan, 1989b, p. 525), but it is irrelevant that demonstrations are mounted by particular agents or even that they are mounted by any agent at all. Kaplan's point is open to several interpretations, but at least one suggests that demonstrations are independent of any particular intentional profile for the agent that performs them. We believe that this interpretation is at odds with the intuitive treatment of demonstrations as actions. Even if it is inessential that a particular agent performs the demonstration, it does not follow that demonstrations are not individuated (at least partially) in terms of particular kinds of intentions and other attitudes of the speaker.

Second, with a few exceptions (cf. Benzi & Penco, 2019), equally little attention has been paid to rich and heterogenous nature of demonstrations. It is our impression that most authors either completely ignore the existence of demonstrations analogous to [S2] and [S3] or presuppose that it is impossible to build a systematic theory that comprises the whole variety of demonstrations. Indeed, some (cf. McGinn, 1981) propose to base the entire semantics of demonstratives on the idea of a line projected from a pointing finger. The theory sketched in this article intentionally dissociates itself from approaches of this kind and proposes instead a framework that takes into the account how we actually use demonstratives. Hence, we shall introduce here the

² This does not apply to the agentive nature of uses of demonstratives, which received interesting treatment within the intentionalist tradition (cf. King, 2014; Radulescu, 2019).

³ Kaplan changed his views later (cf. Kaplan, 1989a).

concept of *demonstration in the broad sense* or (as we shall say) *demonstration sensu lato* that explicitly acknowledges the heterogenous nature of demonstrations.

Third, recent discussions of demonstrative utterances have been dominated by the task of providing the truth-conditional analysis of those utterances as well as finding *the* factor (be it a demonstration or a referential intention) that determines the truth-conditional contribution. However, all of the existing accounts known to us deal with problems and are prone to potential counterexamples. We therefore propose (see Sect. 6.1) a theory that not only offers a middle ground between the opposing positions, but also deals better with the challenges those approaches face.

Fourth, no adequate account of cases like [S4] has been provided so far. We believe that the theory presented below (see Sect. 6.2) offers a new perspective on such cases. In accordance with the general treatment of demonstrations and demonstratives presented in this paper, our proposal stresses that cases like [S4] embrace a specific action (refraining) together with the entire intentional profile present in other cases of demonstrations. Overall, a novel theory that elucidates the broad sense of demonstrations understood as actions is needed and philosophically justified.

Interest in the agentive nature of demonstratives, at least when semantics is concerned,⁴ might seem controversial, as it is at odds with the well-known warning that “logic and semantics are concerned not with the *vagaries of actions*, but with the *verities of meanings*” (Kaplan, 1989a, p. 590; Predelli 2005). However, our aim is not to consider the view that irregularities of action have to be acknowledged by truth-conditional accounts of demonstratives (or any other expressions), but rather that some *regularities* of action deserve such a role. We agree in this respect, for instance, with the recent opinion of Radulescu (2015, p. 1853). The difficult task here is to show what counts as relevant regularity, as well as to provide content for the uncontroversial but also general and vague observation that, in the case of demonstrative utterances, “the identification of the referent is assisted by a pointing gesture” (Ogihara, 2011, p. 39).

We hope to achieve this by proposing a *dual intention model* (DIM) of demonstrations as actions accompanying acts of demonstrative communication which, among other things, is consistent with the broad and heterogenous nature of demonstrations, explores their agentive aspects, reconciles intentionalist and non-intentionalist intuitions regarding various uses of demonstratives, and gives an account of missing demonstrations and the reverse cases of demonstrations unaccompanied by demonstratives.

The roadmap for the paper is as follows. Section 2 introduces the basic idea of DIM, Sect. 3 supplements it from the point of view of philosophy of action, and Sects. 4 and 5 offer an account of the semantics that DIM embraces and a discussion of some consequences of the theory. Section 6 contains a discussion of DIM’s applications to specific key problems raised in the literature.

⁴ This observation can be applied to pragmatics if pragmatics is conceived as a systematic theory of inferences performed in the process of communication.

2 The dual intention model

The broadly Gricean picture (Grice, 1969, 1975) implies that communication is a complex deliberative and reflexive process (Bach & Harnish, 1979). Utterances made in communication back communicative exchanges and make sense only when speakers intend to contribute to communicative exchanges in a recognizable way. The success of a conversation depends on both the speaker's formation of a communicative intention and on the interpreter's⁵ recognition of it. This classic (and broadly accepted) view of the deliberative character of communication seems to ascribe mutually engaging roles in what the speaker and interpreter do in the communicative exchange, making it a coordinative process: the speaker *intends* to induce a response from the interpreter, and the interpreter *recognizes* the intention—that is, infers the representation behind a speaker's utterance.

Now, agreeing that the Gricean intentionalist picture also works for non-linguistic communication (Recanati, 1986), one may also assume it should also work for instances of communication aided by demonstrations. One proposal, from Berckmans (1990), hypothesizes that demonstrations should be understood as acts involving gestures that aim to produce knowledge of the proposition expressed. Gestures are intentionally related to denoting parts of the utterances that aid them in transferring this knowledge. This implies that the hearer *recognizes* the connection between the gesture and the utterance: if the recognition is successful, knowledge is transferred.

Other accounts follow a similar path. According to Textor (2007, 2015), for instance, demonstrations are actions that guide the perceptual attention of the interpreter to a certain object. They constitute intention-dependent evidence for recognition as a basis for knowledge about that object. How is such recognition possible? Textor points to the understanding of “demonstration by appreciating the intention with which it is made and the conventions that govern it” (Textor, 2007, p. 967).

According to the above views, demonstrations must be accompanied by the intention that both distinguishes a certain object of reference and—to use the language of Sperber & Wilson (1990)—modifies the interpreter's cognitive environment, which in turn specifies certain data that, if recognized or understood, may be used by the interpreter to form a certain perceptual belief.⁶ Roughly speaking, the received view about demonstrations may be reduced to the following:

Demonstrations are acts associated with complex intention:

- (a) To distinguish a certain object x , and.
- (b) To communicate a proposition (possibly singular) about x —that is, to transfer the knowledge that the utterance expresses a proposition about x .

We assume that the speaker's intention to communicate something accompanied by demonstration must be recognized (that is, requires a certain type of inferential reasoning). Our aim is to provide a more detailed analysis of this assumption.

⁵ Here we use the term *interpreter* rather than *hearer* or *addressee*; the interpreter is any agent who interprets an utterance.

⁶ The issue of understanding was explored in the literature on communicative intentions; e.g., Stone (2003) defines understanding of communicative intentions as the interpreter's inference of the representation behind a speaker's utterance. The theory presented here fits these general characteristics.

We propose a view according to which demonstrations are semiotic acts⁷ accompanied by the complex intention to, first, induce the interpreter to formulate a certain explanatory hypothesis concerning the constituent action of the speaker (i.e. indication or pointing) and, second, to formulate—on the basis of that hypothesis—a further hypothesis concerning the demonstratum and the related content of the utterance. We call this the *dual intention model* (DIM), as the complex intention in question might be decomposed into two sub-intentions to induce the interpreter to formulate two distinct (yet related) hypotheses.

The account based on this understanding of demonstrations is novel. Before explaining in more detail, consider how it deals with [S1]–[S3] (example [S4] is discussed in Sect. 6.2):

[S1] Pointing by a finger is an action that induces the interpreter to formulate the hypothesis explaining that action (accompanying the utterance *This is beautiful*). Once the hypothesis is formulated, it is used to determine the demonstratum and ascribe the content to the utterance. Assume, for instance, that the utterance induced the interpreter (B) to formulate the hypothesis that the speaker (A) wants to identify Renoir's *Luncheon of the Boating Party* to say something about it. The natural next step for B is—on the basis of this hypothesis—to ascribe to the demonstrative utterance of A the content that *Luncheon of the Boating Party is beautiful*.

[S2] The imitation of a certain volume of John's voice is an action that induces the interpreter to formulate the hypothesis explaining that action (as accompanying the utterance of *John can speak only this loud*). Again, once the hypothesis is formulated, it is used to determine the demonstratum and ascribe the content to the utterance. Assume, for instance, that the utterance induced the interpreter (B) to formulate the hypothesis that the speaker (A) wants to identify the loudness of *n* sones⁸ and say something about it. The natural next step for B is—on the basis of the hypothesis—to ascribe to the demonstrative utterance of A the content that *John can speak only with the loudness of n sones*.

[S3] Making a hand gesture conventionally related to the utterance of *yea* is an action that induces the interpreter to formulate the hypothesis explaining that action (as accompanying the utterance of *That fish was yea big*). Assume, for instance, that the utterance induced the interpreter (B) to formulate the hypothesis that the speaker (A) wants to demonstrate the length of half a meter and say something about the length. Assume also that an analogous hypothesis was formulated with respect to *that* and B thinks A wanted to identify that particular fish. As above, the next step for B is—on the basis of the hypothesis—to ascribe to the demonstrative utterance of A the content that *The fish in question was half a meter long*.

In all of the cases, B's hypotheses might be incorrect in the sense of identifying a distinct object from the intended demonstratum and attributing the propositional content distinct from the one intended by the speaker.

We propose to analyze the ideas of “recognition” and “understanding” of the connection between the intention accompanying the utterance expressed by the speaker

⁷ By “semiotic act” we mean an action that functions as a sign (or involves using something as a sign).

⁸ A term from psychoacoustics: “sone” is the unit of subjective loudness, i.e. the subjective perception of sound pressure.

and the demonstration; we do this in terms of the idea that the interpreter is invited to formulate two hypotheses on the basis of what the speaker does and the interpreter's own representation of the conversational situation. From the speaker's perspective, demonstrations require the formation not only of communicative intentions but also of intentions to induce suitable inferences concerning the constituent action of pointing or indicating and the demonstratum. More technically, a distinction between these two forms of intention is needed:

Abductive intention—intention to induce the interpreter to make a certain inference that results in formulating the explanatory hypothesis pertaining to the constituent action of pointing or indicating.

Deictic intention—intention to induce the interpreter to make, on the basis of the explanatory hypothesis pertaining to the action of pointing or indicating, a certain inference that results in formulating the hypothesis pertaining to the demonstratum.⁹

It is worth noting that understanding or interpretation may be modeled as a form of abduction.¹⁰ The term *abduction* does, however, have at least two distinct uses in the literature. The first one, more popular, which is *not* the sense we have in mind, is abduction as a method of justifying hypotheses. The second, less popular but historically prior (Peirce, 1931–58, p. 5.172; Fann 1970; Tschaepe, 2014), *is* the sense in which we are using the term abduction. To use Peirce's own formulation (cf. Peirce, 1931–58, p. 6.525) abduction is the method of formulating, guessing, or entertaining explanatory hypotheses. The idea behind the concept of abductive intention is that the speaker intends to make the interpreter guess an explanatory hypothesis regarding the speaker's ostensive action or to match the hypothesis with the observable ostensive action of the speaker.

Abductive inference here is the case of a pattern of the hypothesis search strategy which Schurz (2008, p. 215) called *qualitative model-abduction*. Here, the explanandum is the fact that a certain utterance is assisted by *indication*; this might be seen as an exemplification of a generalization that pertains to the fact that utterances of a certain type (e.g., 'that'-utterances) are normally assisted by demonstrations qua indications (i.e., ostensive acts). The hypotheses used in the explanation here concern the attitudes (beliefs, desires, and intentions) of the speaker and, as such, make use of assumptions derived from the folk theory of rational behavior as well as beliefs about the conversational situation (they both constitute the interpreter's representation of the conversational situation). The assumptions in question take on the role of the background theory that appears in all theoretical-model abductions. One can make a hypothetical guess completely blindly (without sufficient evidence) in response to something totally unexpected, or one may make a guess on the basis of the knowledge

⁹ Deictic intention presupposes that both the intended demonstratum and the intended referent are known and the latter (possibly identical with the former) contributes to the content of the entire utterance.

¹⁰ We are not exploring here a *terra incognita*. Cf. Gabbay and Woods (2005) and Hobbs et al. (1993). An abductive-reasoning approach to intention recognition has been introduced in the literature in computational linguistics (Bunt & Black, 2000; Janiček, 2012; Stone & Thomason, 2002), AI (Yamada & Mukaidono, 1993), and in theories that construe the propositional content of utterances as provided by the process of inference of the best interpretation (Atlas, 2005; Atlas & Levinson, 1981) or as involving the procedure of stage setting (Woodfield, 1994).

or evidence possessed in the circumstances that are stable and relatively predictable. Our elucidation of what is happening in the various types of demonstrations [S1]–[S4] follows the second path. In all four cases, the abductive hypothesis generation provides the mechanism that allows the interpreter to solve the problem that follows the ostensive act.

The hypothesis that is the subject of the abductive intention concerns, therefore, the attitudes of the speaker that bring about a particular ostension (indication). Here, however, one has to be very careful because the notion of *indication* manifests well-known action-product ambiguity (Moltmann, 2013; Twardowski, 1911; van der Schaar, 2006), which is of utmost importance for the proper analysis of demonstrations. When we speak about producing an indication/ostension, we mean the action of indication (not the product). The former is the subject matter of the abductive intention, while the latter contains or determines objects that count as potential demonstrata.

Let us illustrate this point by slightly modifying a scenario provided by Reimer (1991): Suppose that Peter grabs a bunch of keys from his desk while saying *These are mine*. The bunch actually contains some keys that are Peter's and some that are not. Here, the action of indicating—or the ostensive act in the proper sense—is the action of grabbing the entire bunch of keys. The indication qua product is the result of the action of indicating which, as such, involves all of the keys and the sub-collections of keys in the bunch that count as *potential demonstrata*.

How is the class of potential demonstrata determined? Without attempting to give a general theory, the answer depends, first, on the type of action that is an indication—that is, there is no general rule that determines this procedure in a way that fits every action that counts as indication. Second, one can try to distinguish roughly between two types of actions according to how they relate to the class of potential demonstrata. We have indications such as those that occur in [S2] and [S3] which determine the class of potential demonstrata by virtue of the intrinsic properties of the indications. We also have indications like [S1], whose intrinsic properties do not determine possible demonstrata: external changes might result in immediate changes to the class in question. Third, potential demonstrata must be determined independently of the speaker's deictic intentions. According to our semantic assumptions (see Sect. 4), deictic intentions *operate* on a class of potential demonstrata to yield the actual demonstratum, so they cannot play any role in determining the former class. The general working hypothesis here is that the class of potential demonstrata consists of objects that a potential rational interpreter might consider as demonstrata when forming the hypothesis explaining the action of indication. We assume that, on numerous occasions, there are many hypotheses at stake and that the class of potential demonstrata is thus numerous.

One of our motivations for introducing the notion of abductive intention and distinguishing it clearly from deictic intention is the observation that the cases of *deceptive demonstrative communication*¹¹ do not differ from cases of regular demonstrative communication in terms of the mechanism employed by the speaker. Consider, for instance, a pair of pickpockets. One utters to potential victim A: “Look at this!” to

¹¹ By which we mean that the primary thing the speaker cares about is the attention-directing impact of the utterance.

distract A's attention and make the theft easier. At the initial stage of the demonstrative communication, it does not really matter if the pickpocket indicates a real object or event and if 'this' refers to anything at all—that is, deictic intention plays a secondary role here. What matters is the intention to induce A to formulate a hypothesis regarding the overt action of indication and to base actions on that hypothesis. We believe that the situation is analogous in regular cases of demonstrative communication. The only difference is that, in such cases, deictic intentions *become* important at a later stage in the communicative exchange.

Deictic intentions—that is, the intentions to make the interpreter formulate a hypothesis regarding the demonstratum—should not be confused with related intentions to communicate certain content, as well as with communicative intentions (in the sense of Grice 1957, 1969). First, a demonstratum might not be identical to the semantic value of the corresponding demonstrative by being only indirectly connected with the propositional content (by being its constituent in cases where it is identical with the semantic value of the corresponding demonstrative). Second, the Gricean idea of communicative intention is richer than our modest idea of deictic intention. The idea of deictic intention does not embrace perlocutionary intentions, and reflexivity built into the Gricean idea of communicative intention. Last but not least, we think that one should clearly distinguish intentions to communicate from intentions to mean something (see below). In Gricean tradition the two concepts merge and result in problems connected with audienceless communication (cf. Hyslop, 1977).

At the very same time the idea of communicative intention presupposes that a speaker knows what content he or she intends to communicate and, by the same token, that the speaker also knows the intended demonstratum. Here the communicative intentions converge with deictic intentions: the intended demonstratum is either a common element of both or—if the phenomenon of deferred reference occurs (see below)—it is appropriately related to the object the speaker has in mind and of which he or she wants to speak. Suppose that on a certain occasion I want to communicate something about an x and that I want to do that by employing a demonstrative. This requires me to enable the recipient to identify x . I therefore perform an action that is intended to serve either directly or indirectly (deferred reference) this purpose. This action requires interpretation on the part of the recipient, i.e. the speaker intends the interpreter (hearer) to form a hypothesis regarding the reasons behind the speaker's action (the hypothesis normally involves attitudes directed towards a potential demonstratum or demonstrata). The deictic intention, on the other hand, is an intention aimed at making the recipient —on the basis of that interpretation—an agent who identifies x and recognizes the content I want to communicate. Both abductive and deictic intentions are components of my overall communicative intention. As such, they also play instrumental roles in relation to the latter.

It should be stressed here that the scope of our theory is restricted to acts of demonstrative communication¹². This means that utterances of sentences like:

Wow, this tastes great.

¹² We would like to thank one of anonymous reviewers for stressing the importance of this issue. The wine example is also due to them.

occurring without the presence of communicative intention (for instance, when the speaker is addressing herself while drinking a glass of wine) fall out of the scope of our theory. We agree here with authors such as Davis who stress that “Meaning is not necessarily the attempt to communicate” (Davis, 2002: 75). We leave open the question of whether our theory can be extended to deal with such cases.

In all cases [S1]–[S3], we stressed the fact that the speaker wants the interpreter to formulate a hypothesis that the speaker wants to identify a certain object to say something about it. We might borrow the linguistic terminology here and say that such a desired object of identification—in cases like [S1]–[S3]—is a *thematic goal* of the deictic intention and associated attitudes of the speaker. Now, from the standpoint of the deictic intention, the thematic goal is not always the intended demonstratum. We constantly identify objects (demonstrata) to say something about other objects. Authors such as Geoff Nunberg introduce—correctly, we believe—a special notion of representation understood as an indirect identification of an object y through pointing to object x to capture various cases of demonstrative metonymy (for Nunberg, identity becomes a special case of representation; see Nunberg 1993). One might point at a fingerprint (y) while uttering, “He is the culprit” and indirectly identify a particular person (x). Introducing a notion of representation lets us say that the speaker wants the interpreter to formulate the hypothesis that the speaker wants to identify a certain object x to say something about object y represented by x . In cases [S1]–[S4], x is identical to y , while in cases of deferred reference, it is not.¹³ The deictic intention, therefore, concerns primary demonstrata and only derivatively the thematic goal.

3 Demonstrations and the philosophy of action

The idea that demonstrations are actions as understood through the prism of DIM becomes fully understandable from the point of view of philosophy of action. There is an established tradition that sees actions from the perspective of intention. Except for the so-called automatic (habitual or skillful) activities (Di Nucci, 2013), actions usually require—in the standard intentionalist story—explicit intentions to act, and intending is always to do something (Baier, 1970). DIM raises several issues here. We can say that demonstrations are linked to actions in at least three senses:

- [1] A demonstration D is an action because D requires the *abductive intention* and *deictic intention* of the speaker.
- [2] A demonstration D is an action because D requires the *abductive intention* and *deictic intention*, and the accompanying activity of *indication*. It is plain that D must be accompanied by something that allows the interpreter to understand it *qua* demonstration: a gesture engaging human movement, an intentional refraining from gesturing, or a meaningful intonation.
- [3] A demonstration D is an action because being intended (*qua* the molecular set of abductive and deictic intentions) and performed (*qua* indication), it produces a certain result for the interpreter.

¹³ Nunberg later modified his views and suggested analysis in terms of ambiguous demonstrations (Nunberg, 2004).

Of all the three senses above, we accept [2], but as we shall see, the other two senses play some role. For the sake of clarity, let us describe all of them: [1] is related to *intentionalism*. In typical approaches, intending is always to do something (Baier, 1970; Thompson, 2008), and intending itself is a form of acting (cf. Davidson, 1978; Grice, 1971). The first sense in which demonstrations are linked to actions fits into the standard intentionalist picture of actions. The idea that demonstrations require both abductive and deictic intentions has several implications. First is the view that might be called *molecularism*: the molecular set of sub-intentions that enable demonstrations—abductive intention plus deictic intention—to be interpreted as their *building blocks*. The building blocks view is an established theoretical approach in the philosophy of action (see, e.g., the role of future-directed intentions for plans in the so-called planning theory of intention; Bratman 1987; Makowski, 2016). Thus, molecularism of demonstrative intentions has clear underpinnings in the classic ideas of philosophy of action.

A similar situation obtains for the *foundational* role of the molecular set of abductive plus deictic intentions of the speaker (not the mere indication) in demonstrations. However, foundationalism in the philosophy of action might take various forms (cf. Sneddon, 2001). Let us distinguish two versions of foundationalism that, prima facie, may be applied to elucidate the view that demonstrations are actions: causalism and constitutivism. The former, stronger, view posits causal relations between intentions qua building blocks and the indication. The latter, weaker, view posits only constitutive relations between these two aspects of intentions. Here, causalism would amount to the claim that the abductive and deictic intentions of the speaker are *causes* of what the interpreter does in his or her abductive inferences. It would amount to a psychologically realistic story of the psycho-cognitive processes behind demonstrative communication. Constitutivism is rather an ex post rational story about how people understand what they do in demonstrative communication (intentions are building blocks of demonstrations); without aiming to offer an account of the psychological antecedents of demonstrations, our proposal does not commit us to the causal view.

Ignoring Davidson's observation mentioned above, molecular sets of intentions are not sufficient to view demonstrations as actions. The idea that a complex intention needs an accompanying activity of indication as a vehicle for the interpreter's understanding takes us to the *performance* of demonstrations understood as a special kind of agency (Schlosser, 2010) having separate phenomenological properties (cf. Pacherie, 2008). They are instantiated in bodily movements such as gestures, refraining from such movements, or other supporting micro-activities such as voice modulations—that is, activities we have called *indications*. All require motor representations of a certain (probably non-propositional) type to explain how indications guide and control the attention of the interpreter. For this reason, their proper characterization belongs to the competencies of cognitive science and motor psychology (Jeannerod, 2006; Pacherie, 2008). From the perspective of constitutivism introduced above, we can accept the view that indications co-constitute the acts of demonstrations. In the rational story of what happens in demonstrative communication, indications are necessary to embrace its performative dimension.

A final aspect of the view that demonstrations are actions is that demonstrations are not only intended and performed, but must also produce certain results (cf. [3]).

The productive dimension of actions is a standard object of philosophical study for the theory of artifacts (Hilpinen, 2018). This should not be confused with the aforementioned action/product distinction which comes from Twardowski’s (1911) tradition. The view that an indication is an intangible or abstract product makes sense both on the grounds of Twardowski’s theory, which distinguishes between physical, mental, and linguistic actions (Gerner, 2017; Twardowski, 1911), and in the theory of artifacts that distinguishes (inter alia) between the tangible and intangible objects produced (Preston, 2019). However different, these two approximations appear to be useful. The theory of artifacts enables one to highlight the idea that the molecular set of intentions produces a certain result (it creates by aiming to demonstrate), while Twardowski’s distinction helps us better understand that the activity of indication itself can be perceived both *as an action* to which the interpreter refers in his or her explanatory hypothesis concerning the act of ostension and *as a product* involving all of the objects that count as *potential demonstrata*.

The view that demonstrations are actions may be approximated with other ideas, but the above three issues are not only crucial from the perspective of philosophy of action, but also satisfy the purposes of this paper. To summarize the discussion thus far, let us provide an initial schematic representation of the general structure of demonstrations *sensu lato* (see Fig. 1).

In the schema given above, demonstration *sensu lato* (represented as a large box-arrow) is constituted by the molecular set of the abductive intention (A), the deictic intention (B), and the accompanying activity of the basic ostension we call “indication” (C). The indication has two aspects (the fact that *Ca* and *Cp* are aspects of *C* is represented by dotted lines and boxes): indication *qua* action (*Ca*) and indication *qua* product

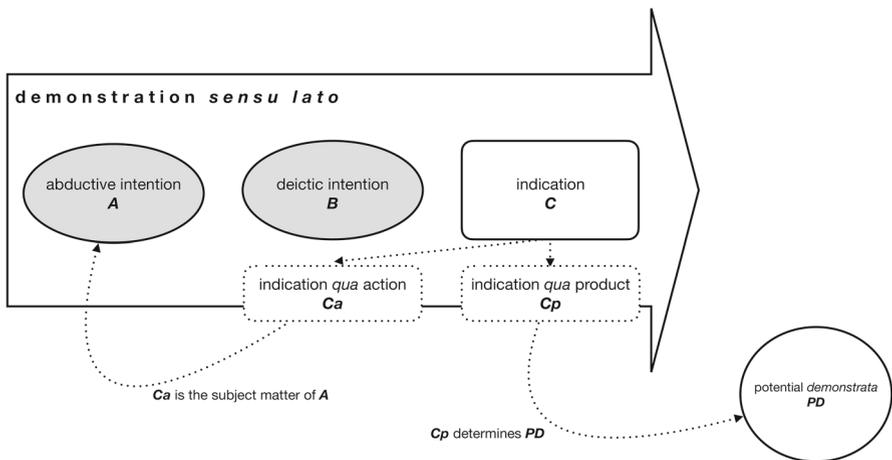


Fig. 1 Schema of the general structure of demonstrations

product (Cp). The former is the subject matter of the abductive intention, and the latter delivers potential demonstrata (PD)—that is, candidates for the demonstratum.

4 Semantics

The view that the indication qua product delivers *potential demonstrata* has a direct impact on the semantics of demonstratives. We suggest that if the number of candidates for demonstrata is larger than one, the actual demonstratum is the demonstratum the speaker has in mind, *provided that the demonstratum the speaker has in mind is among the candidates for demonstrata at all*. If it is not, the ostension and the thematic goal are indeterminate. However, if there is only one candidate for the demonstratum and no risk of indeterminacy occurs, the candidate is the demonstratum, no matter what object is the intended demonstratum.

Our point of departure is the following general clause (cf. Larson & Segal, 1995):

If u is an utterance of “This is G ” and x is the object pointed at by the user of u , then u is true if and only if x is G .

However, in our theory we unpack the notion of *the object pointed at by the user of u* . First, the object pointed at is at the very same time *one* of the objects (candidates for demonstratum) contained in the indication (qua product) as well as—in cases where the number of candidates is bigger than one—the demonstratum that the speaker has in mind. Second, the notion of *the object pointed at by the user of u* is ambiguous because it does not distinguish demonstrata and thematic goals that might be distinct objects.

As already suggested (Sect. 3), the indication might be conceived of as a complex structure that consists of *indication qua action* and *indication qua product*. Because it is the indication qua product that involves candidates for demonstratum and, by the same token, has semantic impact, we may safely omit indication qua action when describing truth conditions. However, both indication qua product and the deictic intention are semantically significant. Roughly speaking, we may represent the contextual parameter relevant for the interpretation of demonstrative utterances as a structure $\langle i_P, I_S \rangle$ with i_P being the indication qua product and I_S being the deictic intention of the speaker s . Let d and d' be functions that assign classes of objects to i_P , and I_S , respectively. The values of d are arbitrary collections of objects from a given domain, while the values of d' are singleton classes of objects from a given domain. This represents the assumption that the speaker has in mind a single entity as the intended demonstratum. Finally, let th be a Nunbergian representation function that assigns thematic goals to demonstrata (in the simplest and regular cases $th(x) = x$).

The speaker performs a certain indication qua product that, among other things, determines the class $d(i_P)$ of potential demonstrata. She also has a deictic intention I_S that determines the singleton class $d(I_S)$ that contains the demonstratum the speaker has in mind. At the same time, we assume that the speaker might be incorrect in judging whether the intended demonstratum is on the list of actual candidates for demonstrata (cf. our key example). We arrive at the following truth-conditional analysis of utterances containing simple demonstratives:

If u is an utterance of “This is G ” in the context C that contains the speaker s , an indication i_P and the deictic intention l_S , then.

- (1) if $|d(i_P)| = 1$, then u is true if and only if for every x in $d(i_P)$, $th(x)$ is G .
- (2) if $|d(i_P)| \neq 1$, then (i) if $d(i_P) \cap d(l_S) \neq \emptyset$, then u is true if and only if for every x in $(d(i_P) \cap d(l_S))$, $th(x)$ is G ; (ii) if $d(i_P) \cap d(l_S) = \emptyset$, then u lacks truth value.

The semantic clause for ‘this’ takes the following general form:

$[[\text{this}]]^{c,w}$ = the object that is in the representation relation to the demonstratum co-determined by the indication and the deictic intention.

The following schema illustrates how the truth-conditional analysis complements the structural account of demonstration *sensu lato* (Fig. 2):

Figure 2 supplements Fig. 1 by a schematic representation of the semantic mechanism behind the given truth-conditional description. Depending on how big the class of potential demonstrata (PD) is, the demonstratum (D) is either an object from this class (clause (1) of the truth-conditional scheme) or an object co-determined jointly with the deictic intention (clause (2) of the truth-conditional scheme). The thematic goal (T) is an object appropriately related to the demonstratum by the Nunbergian representation function (represented as a solid arrow from D to T).

This not only embraces the *sensu lato* character of demonstrations but also shows that the concern that “If (...) any linguistic or extra-linguistic cue can supplement the meaning of a demonstrative in determining its referent on an occasion of use, that would be a reason to despair for anyone looking for a tractable semantic theory of demonstratives” (Stojnic et al., 2013, p. 508) is unjustified.

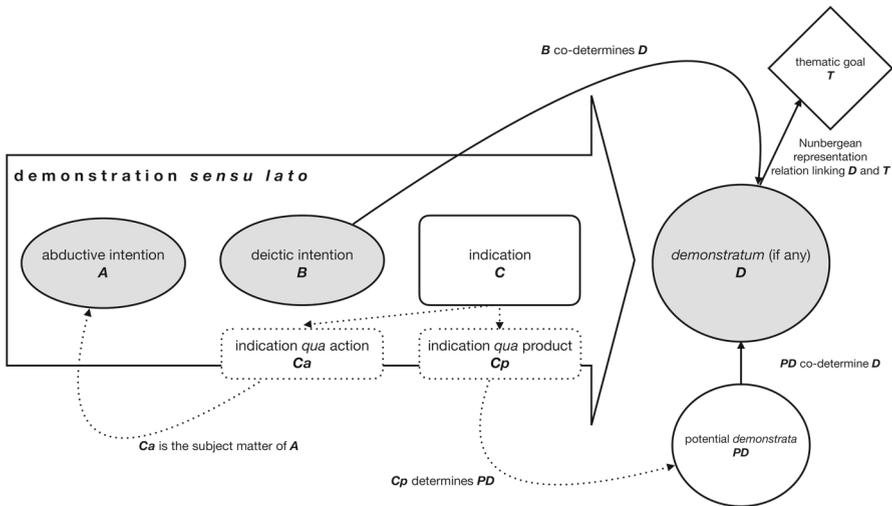


Fig. 2 Schema of the general structure of demonstration with semantics

5 Application to selected examples

The architectonics of DIM offers fairly intuitive, philosophical answers to a variety of practical puzzles. We can illustrate this by applying it to selected examples, starting with cases in which the intentions of the speaker give way to an indication. This would include the case of Peter's keys discussed by Reimer (without the indeterminacy we introduced in the modified version) or the scenario given by de Gainesford where one horse (*Two-fingered Salute*) replaces another (*Doorlatch*) during the utterance of "that's my horse" when the speaker closes her eyes for a second (de Gainesford, 2008, p. 169). In both cases, our model predicts that the thematic goals of the utterances are, respectively, the keys Peter actually grabbed (i.e., those belonging to his office mate) and *Two-fingered Salute*, unless one is ready to defend the view that the class of potential referents is not a singleton class (we do not see any reason to think of the cases as containing indeterminate or ambiguous indications). In both cases, therefore, indications override the referential intentions. They are also cases in which the speaker misrepresents the structure of her own indication.

What about cases in which the speaker speaks to herself and cases where she addresses agents whom she, at least implicitly, presupposes lack the cognitive abilities to perform the abductive reasoning that is the target of our abductive intention (e.g. animals, machines, or infants)?¹⁴ The analysis of such cases depends on how we spell out the relevant details. The cases in question can either be classified as examples of less standard (and potentially confused) demonstrations or actions when the speaker is not involved in communication-oriented demonstration at all (this lack of involvement may take several forms). When, for instance, one is pointing with a finger at a toy while addressing a puppy, we believe that the speaker is either temporarily suspending knowledge/beliefs about the puppy's cognitive abilities or that the speaker is somehow pretending that a demonstration is performed at all. Cases of soliloquy does not involve pretense but they remain—as we have mentioned earlier – acts of meaningful utterances without a communicative intention. They (jointly with the acts of pretense) do not fall within the scope of our theory.

The concept of thematic goal—that is, the concept of the desired object of identification—plays an important role in the analysis. This has certain consequences we would like to make explicit before moving on. Consider cases [S2] and [S3] again: they involve demonstrations qua indications that are constitutive of the facts that particular objects are demonstrated. Consider situations in which the speaker has a particular thematic goal in mind; for instance, the speaker wants to say something about the particular loudness of noise or length of a certain object. Due to inadvertence or some external and involuntary factors, the speaker misperforms the demonstration and actually indicates an object different from the thematic goal. We might also consider the cases analogous to [S1] where the thematic goal and the pointing cross each other: the well-known example of the Carnap-Agnew portrait (Kaplan, 1979)—that is, the case in which one intends to point at a picture of Carnap but actually points at the

¹⁴ We would like to thank Alex Radulescu and Dan Zeman for bringing this issue to our attention. Although the DIM does not model successful communication—that is, it can be reconciled with various possible developments of linguistic interactions—the problem remains viable when the speaker's perspective is taken.

picture of Agnew, which she believes to be the picture of Carnap—belongs to this category. Now, our analysis of such cases is that, on each occasion, the properties of the object actually indicated matter for the truth assessment of the utterance, even if the speaker incidentally indicated an object different from the one he or she has in mind.¹⁵ There is an important modal difference between the two situations. In cases of the first sort (that is, cases of indications that are constitutive of the facts that particular objects are demonstrated), it is not only the indication qua product but also the indication qua action that determine the object of reference. In cases of the second sort (Carnap-Agnew portrait, etc.), the indication qua action does not determine the portrait of Agnew as the object involved in the demonstration qua product. No intrinsic properties of the action are constitutive of the fact that the referent is this particular object rather than the other. Our theory, therefore—by stressing the action-product distinction pertaining to indications—offers a perspective for distinguishing cases like [S2] and [S3] from other uses of demonstratives.

Let us close this section by observing that, although truth-conditional analysis should not be confused with communicative success, our approach enables us to say something about the latter. This is exactly the area where the notion of abductive inference plays a crucial role: Coordination of the speaker's thesis and the interpreter's abductive hypothesis *prima facie* constitute a necessary condition of communicative success. Here, communicative success and truth might diverge. Consider again the example of misperformed demonstrations in situations like [S3]. Due to some perceptual flaw, accidental external factors, or simply incorrect beliefs, the interpreter might accidentally guess the correct abductive hypothesis and correctly identify the speaker's thematic goal. One might, for instance, see the misperformed gesture described in [S3] in the mirror, resulting in resizing the length exactly to the size that the speaker has in mind. The interpreter might thus guess correctly what object the speaker intended as a demonstratum and, if no differences arise with respect to the interpretation of the remaining (non-demonstrative part) of the utterance, the communication will be successful. At the same time, what is said might simply be false and involve an object which neither the speaker nor the interpreter has in mind.

6 The merits of DIM

According to our theory, both indications and intentions play a semantic role. DIM offers a middle-ground perspective on the intention or demonstration problem. We believe that treating demonstrations (as well as indications) as actions offers a new

¹⁵ What about situations where the intended object is actually the one in terms of which the action is explained? For instance, one may want to call attention to the picture of Carnap even if it is no longer present (especially if it is a matter of common ground that it has been present in the place indicated). We would like to stress two things here. First, in cases of this sort (contrary to the case discussed above), the indication is not incidental but intentional. Second, our model enables the analysis of such cases in terms of the Nunbergean relation of representation: the portrait of Agnew (the actual demonstratum) represents the portrait of Carnap via contextually given relationship taken from the common ground. Therefore: If one wants to follow the idea of taking the intended demonstratum as the element of an adequate action (of indication) explanation, DIM can accommodate this view.

perspective on the cases of demonstrative use without overt pointing gestures, as well as the reverse cases of such gestures without a demonstrative.

6.1 Demonstrations and intentions

DIM has a direct consequence for the broadly discussed intention-or-demonstration problem (Bach, 1992; King, 2014; Leth, 2020; Perry, 2009; Radulescu, 2019; Reimer, 1991; Roberts, 1997): the question whether intentions or pointing gestures determine the reference of demonstratives. The answer it provides is this: depending on the situation either of the two factors might count as *decisively* determinative, but in every case they actually codetermine the reference.

Consider the following scenario: someone says *This is my favorite color*, indicating an object that is red (lighting is normal, etc.). At the same time, imagine that the interpreter (but not the speaker) of the statement does not distinguish between any colors except black and white (e.g., through color blindness). Our theory predicts that the speaker said something about the color red: the color that the speaker has in mind and that belongs to the class of colors that are candidates for referents (this class, we might assume, contains at least two elements: red and black). In the reverse case (with the speaker suffering from color blindness), our theory predicts that the thematic goal (the object the utterance is about) is the color black. It may seem that the intention of the speaker is referentially determinative, but actually the situation is more complex: both the intention of the speaker and the structure of the indication are jointly referentially decisive.

We believe that DIM offers a more compelling perspective on uses of demonstratives than one-factor theories such as simple intentionalism and *demonstratism* (to coin a term for the theories that treat acts of ostension as the reference fixing factor). Consider something like the standard challenge for some variants of intentionalism:

(...) even if you intend Sue to be the referent of your use of ‘she’, if she is not a prominent candidate referent, you will fail to pick her out. For example, if you are pointing at Ann, then the referent of ‘she’ is Ann, *even if* you intend it to refer to Sue. (Stojnic et al., 2013, p. 506)

The approach of DIM to such cases is straightforward: Ann but not Sue is in the class of potential demonstrata (associated with the indication qua product), therefore Sue cannot be the referent of the demonstrative pronoun while Ann is the referent. This is an expected and intuitive prediction. Note that some more sophisticated versions of intentionalism are only partially successful in dealing with such cases. Consider King’s (2014) coordination account, which supplements referential intentionalism with an additional condition that obliges the speaker to make the intended referent recognizable for the competent, reasonable, and attentive hearer. This version of intentionalism prevents Sue from being the referent in the described case (which is the correct prediction, we believe) but simultaneously does not secure Ann as the referent (which seems incorrect).

There are other examples that are problematic for the coordination account. Here is the absent-minded professor scenario from Radulescu (2019, p. 782):

Julia is teaching a class on ontology. She is presenting her own view that objects made up of natural materials are more than mere collections of atoms. She is agnostic about objects made up of artificial materials, and, unless pressed, she prefers not to discuss them. She starts the class by announcing that she will defend the view that some medium-size objects are more than mere collections of atoms. To her right, among the clearly visible objects are a wooden chair, the only natural-material object in the room, and many other chairs, all obviously made of plastic. Vaguely pointing to her right, and giving little thought to the membership of her audience, she says ‘That is more than the sum of its atoms.’

According to Radulescu the referent here is the wooden chair, which is hardly recognizable for the competent, reasonable, and attentive hearer, so the prediction of the coordination account (that ‘that’ fails to refer) seems incorrect. We are not certain about our intuitions regarding the quoted case but, if Radulescu is correct, so is the prediction of DIM. According to our theory, the indication secures as potential demonstrata several objects including one wooden chair. Because Julia intends to point out the wooden chair in question, DIM predicts that the wooden chair is the referent of ‘that’ in this particular scenario.

Radulescu offers an alternative intentionalist account, *expressive intentionalism*, according to which the reference of a demonstrative can be derived from the reference of the respective demonstrative constituent of the thought expressed by the utterance containing the demonstrative. This view agrees with DIM in the analysis of the absent-minded professor case; however, it differs from DIM in the analysis of the Ann-Sue scenario, as Radulescu (2019, pp. 787–788) disagrees with the intuitive verdict. One of his arguments deserves special attention here: he observes that in a slightly modified scenario when the speaker is addressing herself we “lose all intuition that there is anything important about the pointing” (2019, p. 787). We generally agree with this observation but the important question is why one loses the intuition in question. As we have noted above DIM does not apply to cases where no intention to communicate is present. However, if we treat such cases as nonstandard communicative acts (we are not committed to this treatment but let us consider this as a general possibility), the situation might be analyzed in the following manner: the soliloquy cases make the entire hypothesis-guessing task trivial (at the end of the day the speaker knows why she did what she did and what the intended demonstratum is). Pointing may seem irrelevant because no matter how it is performed or misperformed, the speaker knows the rationale behind it. To sum up: DIM seems to deal well with cases that seem to be problematic from the point of view of some versions of intentionalism. Even if DIM is considered yet another version of the intentionalist stance, it appears to be a superior version of the view in question.

What about demonstratism? The crucial issue here regards cases of insufficient demonstrations—that is, demonstrations that intuitively fail to secure the reference. We already discussed such cases, but let us stress again DIM’s predictions: the crucial question regarding such cases is whether the intended demonstratum is in the class of potential demonstrata. If it is, the referent is the object appropriately related to the demonstratum; if it is not, there is no reference and we are dealing with a truth-value gap. The next question is how this abstract analysis applies to particular cases:

what happens for a particular case where the intended demonstratum is in the class of potential demonstrata? Answering this question requires some decision regarding the scope of the class of potential demonstrata: the class of objects that a potential rational interpreter might consider as demonstrata when forming the hypothesis explaining the action of indication. Answering this question is not always easy. Nonetheless, DIM offers at least one step towards an analysis of particular cases that does not rest on potentially conflicting intuitions concerning the reference of demonstrative clauses. Ultimately, it is probable that progress in philosophy requires replacing one conflict of intuitions (here: the one regarding the reference of demonstrative) with another (here: the one regarding the potential demonstrata).

6.2 Demonstratives unaccompanied by overt pointing

The last example, [S4], illustrates cases missing demonstrations (MS). Before analyzing this type of case, let us stress that, according to some possible extensions of DIM, not all examples treated in the literature as cases of MS would deserve this status. For instance, in uttering *I wish that noise would stop* instead of *I wish this would stop*, the use of the predicate “noise” might count as an element of an indication, especially if we follow Kaplan (1978) in claiming that describing (and using a predicate) might sometimes be a form of pointing. The cases we are interested in comprise situations with simple demonstratives without visible indication present.

What do existing accounts of such cases have to offer? Textor (2007, p. 957), for instance, approaches the problem of MS by claiming that in such cases the entire utterance itself *plays the role* of demonstration. Textor’s idea is consistent with DIM and we have nothing against applying it to *some* demonstrative utterances involving MS. We do not think, however, that it correctly describes *all* cases. It is also problematic how this view may account for atomic sentences involving occurrences of two or more demonstratives. Suppose, for instance, that I utter: ‘*This was way louder than this*’ a few seconds after hearing two consecutive noises (two strokes of lighting, for example). Here there is only one (entire) utterance and two noises. Depending on the situation the utterance might link the first demonstrative with the first noise and the second with the second noise, or vice versa. Neither referring to the very presence of the entire utterance nor to its structure (which involves the order in which sub-utterances of demonstratives occur) can provide the relevant link between the occurrence of a demonstrative and object demonstrated with this occurrence.

An alternative approach (Stojnic et al., 2013; Stojnić et al., 2019) attempts to analyze such cases within a theoretical framework which claims that the linguistic meanings of demonstratives—without an appeal to intentions or demonstrations—determine the reference. In the case of missing demonstrations, the general idea is that there is a special contextual update (conceived as a function from contexts to contexts; context being understood as sequences of objects) conventionally associated with the use of a demonstrative. This update restructurizes the initial context (its attentional state, specifically) by making the central individual of the context the most prominent potential referent of a demonstrative. This theory, however, tells us nothing about what

makes certain individuals central (cf. Nowak & Michaelson, 2020, p. 130) and—contrary to the initial declaration of the authors—presupposes some additional mechanism that appeals to pointing gestures, intentions, or some other aspects of the utterance situation. For instance, although this approach seems to deal better with the relational statements that are problematic for Textor, it does not answer the question of why and how on a particular occasion a certain pair of individuals (in that particular order) becomes central. Our analysis of [S4] begins with the following formulation:

[S4] Doing nothing (except for uttering the sentence) induces the interpreter to formulate the hypothesis explaining that action (as accompanying the utterance of *I wish this would stop*). Once the hypothesis is formulated, it is used to determine the demonstratum and ascribe the content to the utterance.

Here, we want to impugn the common description of the situation (we used it only to introduce our example) as the case where the speaker is literally doing nothing except uttering the sentence: We claim that the speaker is not only uttering a sentence but is also intentionally *refraining* from an overt indication. It is plain that refraining is not the same as doing nothing (Brand, 1971). In the present context, refraining can be defined as an intentional cessation from physical action that requires performance of another action (uttering a sentence or any other effort that catches the attention of the interpreter).¹⁶ Refraining from an overt indication is an action, because it is intended, performed, and produces a certain result for the interpreter.

In the philosophy of action, refraining is usually discussed together with omissions, and there are various views about what a proper philosophical account of them should look like (see, e.g. Clarke 2014; Milanich, 1984). Here, we deal with one possible concern that might emerge from the claim that the speaker acts by refraining from indication understood as a “positive” action. The concern is that refraining from an ostension amounts to a simple negative act—it is the lack of bodily movement (Vermazen, 1985) or a non-performance (Mossel, 2009). The idea of negative acts conceived as genuine actions is sometimes denied (cf. Bach, 2010) because it potentially violates metaphysical parsimony: endless chains of negative actions (e.g., when the speaker refrains from pointing to something, the speaker may at the same time refrain from singing, dancing, writing novels, or planning to climb Mt. Everest). Our idea that intentional refraining needs some additional linguistic activity or intentional *effort* from the speaker deals with this problem. The lack of physical action does not count as the lack of action: the speaker’s complex intention driving ostensive action (in the form of refraining) may still be the subject of the explanatory hypothesis formulated by the interpreter.

In the linguistic literature about demonstratives, it has been noted that several languages require that anaphoric demonstratives have antecedents that are not the current topic and, therefore, are not at the center of attention. The use of anaphoric demonstratives in such cases switches the attention of the person who interprets the sentence from one subject matter to another (cf. Diessel, 1999, pp. 95–100). We would like to suggest here that this, and the complementary phenomenon of *attention maintenance*—that is, the use of a demonstrative to maintain the focus of attention—transcends anaphoric

¹⁶ A more general account of refraining does not require the condition of another action (e.g., prevention). For more on this issue, see Mossel (2009).

uses and generalizes to various other uses of demonstratives. [S4] will, therefore, be analyzed as a case of attention-maintaining use of a demonstrative with indication qua refraining having as a goal maintaining the attention of the interpreter (so we may speak here about the *attention-maintaining strategy*). We do not attempt to indicate objects overtly that are already salient, as this brings an additional risk of misunderstanding. If there is only one noise disturbing the conversation, the speaker may easily hint at it by intentionally refraining (understood as a positive action) from overt ostension. The interpreter might explain this by formulating the hypothesis that the speaker wants to say something about the noise that had already attracted the attention of the speaker and the interpreter. In situations of this sort, the phenomenology of action corresponds to the rational reconstruction of the action: we actually refrain from an overt indication and—when asked why there is no overt indication—we are ready to justify the action by stressing the optimality of attention-maintaining strategy.¹⁷

There are cases, however, where this analysis seems to be phenomenologically problematic. Consider a scenario in which a loud noise coming from an unknown direction causes me to jump and yell: “that scared me!” (assume also that the act is audience-oriented). There seems to be no refraining from ostension here; moreover, the absence of an overt indication seems to result from our limitations regarding what we can actually indicate, not from the fact of choosing the attention-maintaining strategy. However, we still think that, while the refraining is not present here, at the level of action justification, the attention-maintaining strategy provides rationale for the absence of an overt indication: the phenomenology and rational reconstruction diverge (we are sympathetic here to the idea that the phenomenology employs here the utterance-qua-demonstration strategy described by Textor). Consider a slightly modified example with the loud noise, but now the speaker has at her disposal a tool that may imitate various sounds. She does not use the tool to imitate the loud noise, but when asked why she refrained from using it she might definitely say: “I hadn’t thought about it, but since the noise was attracting everyone’s attention using the tool was unnecessary and might result in misunderstanding.” Somewhat similarly, in the original scenario, she may correctly react by saying that the noise was attracting everyone’s attention and any additional action might have raised the risk of misinterpretation. It seems that the analysis we have offered works here, at least at the level of *ex post* rational story. At the same time, it works as both the phenomenologically correct description and the *ex post* rational story in other cases of missing demonstrations.

6.3 Pointing without demonstratives

In the literature, some attention has been paid to the instances of demonstrations, which are the mirror version of MS scenarios, namely: demonstrations without demonstratives. For example, Benzi and Penco (following Hunter et al., 2018) note that

¹⁷ Treating missing demonstrations in terms of intentional refraining enables one to deal with relational cases that are problematic for other approaches in a relatively smooth manner: every occurrence of a demonstrative may be associated with a different act of intentional refraining (as well as with different abductive and deictic intentions). This gives us the general method of approaching relational cases. The method should be supplemented by a theory of multiple occurrences of demonstratives, but this is a general problem that all theories of indexicals and demonstratives have to face.

“demonstrations (including postures and placement in place) alone may take the place of the use of demonstratives” (Benzi & Penco, 2019, p. 4) as in:

Our daughter was sent to her room.

[the speaker nods suggestively over her shoulder so that the addressee may see the scratches on the wall]

Intuitively, the utterance refers to the event of scratching the wall and is (in that respect) perfectly analogous to saying “Our daughter was sent to her room for this” accompanied by an overt demonstration. It is not at all clear how to incorporate cases of this sort into the semantics and pragmatics of demonstrative utterances. We would like to suggest, however, that a slightly modified version of DIM can suit the analysis of such examples.

First, notice that nodding suggestively over the shoulder is a very good example of a demonstration *sensu lato*. Second, notice that our schematic analysis works for cases of this sort perfectly well: we can clearly distinguish an indication (nodding over the shoulder), the abductive intention (the intention to invite the interpreter to form a hypothesis explaining the indication), and the deictic intention (the intention to invite the interpreter to form a hypothesis regarding the demonstratum). The general structure of demonstration thus remains unchanged.

The main difference between such cases and the more standard ones concerns the idea of qualitative pattern abduction (Sect. 2). In cases of pointing without demonstratives, we cannot appeal to a generalization that links utterances of demonstratives with kinds of actions. Instead, to save the idea of applying qualitative pattern abduction to such cases, we have to modify the idea of the generalization to which we appeal. One way of doing this would be to follow Frege and others (Kripke, 2011; Künné, 1992, 2010; Penco, 2013; Textor, 2007, 2015) and opt for the theory of *hybrid expressions* by assuming that the generalizations employed in the qualitative model abductions pertain to hybrid expressions that occasionally may take a slightly degenerate form (where the gesture alone plays a role of an expression).

The details of the idea have to be worked out, but one way of formalizing it is to represent demonstratives as functions mapping indications to a doubleton set containing linguistic expressions-type (‘this’, ‘that’, ‘she’ etc.) and an arbitrary element representing the absence of the linguistic expression. If v is such a function, the left side of the truth conditional clause (see Sect. 4) might take the following hybrid form: “If u is an utterance of ‘ $v(d_{iP})$ is G ’ in the context C that contains the speaker s , an indication i_P and the deictic intention $I_S(\dots)$ ” with the right hand of the truth conditional clause unchanged.

Taking the palpably agentive dimension of such examples into consideration, we may note that the account presented in this paper offers a promising framework for dealing with pointing without demonstratives.

7 Conclusion

In this paper, we have attempted to enrich the philosophy of demonstrations and demonstrative utterances with the dual intention model (DIM) of demonstrations *sensu*

lato. This not only highlights the ameliorative role of the philosophy of action for theory of demonstrations, but also offers a fine-grained elaboration of the most important themes discussed in the theory. Among various issues proposed in our model, we have argued that:

(1) Demonstrations *sensu lato* are complex actions that contain at least three elements: abductive intention, deictic intention, and basic ostensive act of indication.

(2) Indication as a component of a demonstration can be conceived as an action and as a product. It is the former that is the explanandum of the abductive reasoning of the interpreter and the subject matter of the abductive intention. It is the latter that plays a semantic role. The indication qua product provides candidates for demonstrata, while the interplay of the indication and the deictic intention of the speaker constitutes the truth conditional content of the utterance.

We believe that the picture of demonstrations and demonstratives offered in our model significantly enriches current debates on ostension in the philosophy of language. As we have shown, an openly agentive approach that more consistently ties the notion of demonstration with actions not only makes the intuitions about this issue explicit, but allows us to solve important problems such as the issue of missing demonstrations. Our idea of demonstrations *sensu lato* allows us to cover various kinds of examples, which also adds to the systematic character of our model. Finally, the moderately intentionalist approach we accepted turns out to reconcile more standard intentionalisms and theories that treat ostensions as reference fixers. In terms of architectonics, our model builds on well-known ideas and philosophical solutions. It is versatile when it comes to applications and is open to extensions. Although we did not investigate its linkages with classic accounts of ostension, its present form provides sufficient ground for further philosophical studies.

Acknowledgements Work on this article was funded by a National Science Center, Poland, Grant under award Number 2018/29/B/HS1/01868. Earlier versions of this paper have been presented at *Semantics and Philosophy in Europe 2019*, *10th European Congress of Analytic Philosophy* and *11th Congress of Polish Philosophy*. We would like to thank the participants of these events for comments. The paper benefited also greatly from remarks of Dominik Dziedzic, Geoff Georgi, Paweł Grabarczyk, Joanna Guzowska, Bartosz Kaluziński, Maria Matuszkiewicz, Joanna Odrowąż-Sypniewska, Alex Radulescu, Jakub Rudnicki, Piotr Wilkin, Maciej Witek and Dan Zeman. Additionally, we express our gratitude to the anonymous reviewers of *Synthese* for their valuable and helpful comments.

Declarations

Conflict of interest There are no conflicts of interest connected with this paper.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Atlas, J. D. (2005). *Logic, meaning, and conversation*. Oxford University Press.
- Atlas, J. D., & Levinson, S. C. (1981). It-clefts, informativeness and logical form: Radical pragmatics. In P. Cole (Ed.), *Radical pragmatics* (pp. 1–62). Academic Press.
- Bach, K. (1992). Intentions and demonstrations. *Analysis*, 52(3), 140–146.
- Bach, K. (2010). Refraining, omitting, and negative acts. In T. O'Connor & C. Sandis (Eds.), *A companion to the philosophy of action* (pp. 50–57). Wiley-Blackwell.
- Bach, K., & Harnish, R. M. (1979). *Linguistic communication and speech acts*. MIT Press.
- Baier, A. C. (1970). Act and intent. *Journal of Philosophy*, 67(19), 648–658.
- Benzi, M. & Penco, C. (2019). Nonlinguistic aspects of linguistic contexts. In G. Bella & P. Bouquet (Eds.), *Modeling and using context*. CONTEXT 2019. Lecture Notes in Computer Science, Vol 11939. Cham: Springer. https://doi.org/10.1007/978-3-030-34974-5_1
- Berckmans, P. (1990). Demonstrative utterances. *Philosophical Studies*, 60(3), 281–295. <https://doi.org/10.1007/bf00367473>
- Brand, M. (1971). The language of not doing. *American Philosophical Quarterly*, 8(1), 45–53.
- Bratman, M. E. (1987). *Intention, plans, and practical reason*. Harvard University Press.
- Bunt, H. C., & Black, W. J. (Eds.). (2000). *Abduction, belief, and context in dialogue: Studies in computational pragmatics*. J. Benjamins.
- Clarke, R. (2014). *Omissions: Agency, metaphysics, and responsibility*. Oxford University Press.
- Davidson, D. (1978). Intending. *Philosophy of History and Action*, 11, 41–60.
- Davis, W. A. (2002). *Meaning expression and thought*. Cambridge University Press.
- de Gaynesford, M. (2008). *I: The meaning of the first person term*. Oxford University Press.
- Di Nucci, E. (2013). *Mindlessness*. Cambridge Scholars Press.
- Diessel, H. (1999). *Demonstratives form, function and grammaticalization*. John Benjamins.
- Fann, K. T. (1970). *Peirce's theory of abduction*. Martinus Nijhoff.
- Gabbay, D. M., & Woods, J. (2005). Explanationist abduction. In D. M. Gabbay & J. Woods (Eds.), *A practical logic of cognitive systems* (Vol. 2, pp. 75–114). Amsterdam: Elsevier.
- Gerner, M. (2017). Actions and products worldwide. In F. Moltmann & M. Textor (Eds.), *Act-based conceptions of propositional content. Contemporary and historical perspectives* (pp. 325–369). Oxford University Press.
- Grice, H. P. (1957). Meaning. *Philosophical Review*, 66(3), 377–388.
- Grice, H. P. (1969). Utterer's meaning and intentions. *Philosophical Review*, 78(2), 147–177.
- Grice, H. P. (1971). Intention and uncertainty. *Proceedings of the British Academy*, 57, 263–279.
- Grice, H. P. (1975). Logic and conversation. In M. Ezcurdia & R. J. Stainton (Eds.), *The Semantics-pragmatics boundary in philosophy* (p. 47). Broadview Press.
- Hilpinen, R. (2018). Artifact, *The Stanford Encyclopedia of Philosophy* (Summer 2018 Edition), Edward N. Zalta (ed.). <https://plato.stanford.edu/archives/sum2018/entries/artifact/>
- Hobbs, J. R., Stickel, M. E., Appelt, D. E., & Martin, P. (1993). Interpretation as abduction. *Artificial Intelligence*, 63(1), 69–142.
- Hunter, J., Asher, N., & Lascarides, A. (2018). A formal semantics for situated conversation. *Semantics and Pragmatics*, 11(10), 1–52. <https://doi.org/10.3765/sp.11.10>
- Hyslop, A. (1977). Grice without an audience. *Analysis*, 37(2), 67–69.
- Janíček, M. (2012). *Abductive reasoning for continual dialogue understanding*. Paper presented at the New Directions in Logic, Language and Computation, Berlin, Heidelberg.
- Jeannerod, M. (2006). *Motor cognition: What actions tell the self*. Oxford University Press.
- Kaplan, D. (1978). Dthat. In P. Cole (Ed.), *Syntax and semantics* (Vol. 9, pp. 221–243). Academic Press.
- Kaplan, D. (1979). On the logic of demonstratives. *Journal of Philosophical Logic*, 8(1), 81–98.
- Kaplan, D. (1989). Afterthoughts. In J. Almog, J. Perry, & H. Wettstein (Eds.), *Themes from Kaplan* (pp. 565–614). Oxford University Press.
- Kaplan, D. (1989). Demonstratives. In J. Almog, J. Perry, & H. Wettstein (Eds.), *Themes from Kaplan* (pp. 481–563). Oxford University Press.
- King, J. C. (2014). Speaker intentions in context. *Noûs*, 48(2), 219–237. <https://doi.org/10.1111/j.1468-0068.2012.00857.x>
- Kripke, S. (2011). Frege's theory of sense and reference: Some exegetical notes. *Philosophical troubles: Collected papers* (Vol. 1, pp. 254–291). Oxford University Press.

- Künne, W. (1992). Hybrid proper names. *Mind*, 101(404), 721–731. <https://doi.org/10.1093/mind/101.404.721>
- Künne, W. (2010). Sense, reference and hybridity. *Dialectica*, 64(4), 529–551.
- Larson, R., & Segal, G. (1995). *Knowledge of meaning: Introduction to semantic theory*. MIT Press.
- Leth, P. (2020). Speakers, hearers and demonstrative reference. In T. Ciecierski & P. Grabarczyk (Eds.), *The architecture of context and context-sensitivity: Perspectives from philosophy, linguistics and logic* (pp. 81–96). Springer International Publishing.
- Levinson, S. C. (1983). *Pragmatics*. Cambridge University Press.
- Makowski, P. T. (2016). Intention inertia and the plasticity of planning. *Philosophical Psychology*, 29(7), 1045–1056.
- McGinn, C. (1981). The mechanism of reference. *Synthese*, 49(2), 157–186. <https://doi.org/10.1007/BF01064297>
- Milanich, P. G. (1984). Allowing, refraining, and failing: The structure of omissions. *Philosophical Studies*, 45(1), 57–67. <https://doi.org/10.1007/bf00372990>
- Moltmann, F. (2013). Propositions, attitudinal objects, and the distinction between actions and products. *Canadian Journal of Philosophy Supplementary Volume on Propositions*, 43(5–6), 679–701.
- Mossel, B. (2009). Negative actions. *Philosophia*, 37(2), 307–333. <https://doi.org/10.1007/s11406-008-9163-3>
- Nowak, E., & Michaelson, E. (2020). Discourse and method. *Linguistics and Philosophy*, 43(2), 119–138. <https://doi.org/10.1007/s10988-019-09266-7>
- Nunberg, G. (1993). Indexicality and deixis. *Linguistics and Philosophy*, 16(1), 1–43.
- Nunberg, G. (2004). Indexical descriptions and descriptive indexicals. In M. Reimer & A. Bezuidenhout (Eds.), *Descriptions and beyond* (pp. 261–279). Oxford University Press.
- Ogihara, T. (2011). *Tense, attitudes, and scope*. Springer.
- Pacherie, E. (2008). The phenomenology of action: A conceptual framework. *Cognition*, 107(1), 179–217.
- Peirce, C. S. (1931–58). *Collected papers of Charles Sanders Peirce*. Harvard University Press.
- Penco, C. (2013). Indexicals as demonstratives: On the debate between Kripke and Künne. *Grazer Philosophische Studien*, 88(1), 55–71.
- Perry, J. (1997). Indexicals and demonstratives. In B. Hale & C. Wright (Eds.), *A companion to the philosophy of language* (pp. 486–612). Blackwell.
- Perry, J. (2009). Directing intentions. In J. Almog & P. Leonardi (Eds.), *The philosophy of David Kaplan* (pp. 187–201). Oxford University Press.
- Predelli, S. (2005). *Contexts: Meaning, truth, and the use of language*. Clarendon Press.
- Preston, B. (2019). Artifact. In E. Zalta (Ed.), *Stanford encyclopedia of philosophy*. <https://plato.stanford.edu/entries/artifact/>
- Radulescu, A. (2015). The logic of indexicals. *Synthese*, 192(6), 1839–1860.
- Radulescu, A. (2019). A defence of intentionalism about demonstratives. *Australasian Journal of Philosophy*, 97(4), 775–791. <https://doi.org/10.1080/00048402.2018.1521854>
- Recanati, F. (1986). On defining communicative intentions. *Mind & Language*, 1(3), 213–241.
- Reimer, M. (1991). Demonstratives, demonstrations, and demonstrata. *Philosophical Studies*, 63(2), 187–202.
- Roberts, L. D. (1997). How demonstrations connect with referential intentions. *Australasian Journal of Philosophy*, 75(2), 190–200. <https://doi.org/10.1080/00048409712347791>
- Schlosser, M. E. (2010). Agency, ownership, and the standard theory. In A. Buckareff, J. Aguilar, & K. Frankish (Eds.), *New waves in philosophy of action* (pp. 13–31). Palgrave-Macmillan.
- Schurz, G. (2008). Patterns of abduction. *Synthese*, 164(2), 201–234.
- Sneddon, A. (2001). Does philosophy of action rest on a mistake? *Metaphilosophy*, 32(5), 502–522. <https://doi.org/10.1111/1467-9973.00205>
- Sperber, D., & Wilson, D. (1990). *Relevance. Communication and cognition*. Blackwell.
- Stojnic, U., Stone, M., & Lepore, E. (2013). Deixis (even without pointing). *Philosophical Perspectives*, 27(1), 502–525. <https://doi.org/10.1111/phpe.12033>
- Stojnić, U., Stone, M., & Lepore, E. (2019). Pointing things out: In defense of attention and coherence. *Linguistics and Philosophy*, 43, 139–148. <https://doi.org/10.1007/s10988-019-09271-w>
- Stone, M. (2003). Communicative intentions and conversational processes in human-human and human-computer dialogue. In J. C. In, Trueswell, & M. K. Tanenhaus (Eds.), *World situated language use: Psycholinguistic, linguistic, and computational perspectives on bridging the product and action traditions* (pp. 39–70). MIT Press.

- Stone, M., & Thomason, R. H. (2002). *Context in abductive interpretation*. Paper presented at the Proceedings of EDILOG 2002: 6th Workshop on the Semantics and Pragmatics of Dialogue.
- Textor, M. (2007). Frege's theory of hybrid proper names developed and defended. *Mind*, 116(464), 947–982. <https://doi.org/10.1093/mind/fzm947>
- Textor, M. (2015). Frege's theory of hybrid proper names extended. *Mind*, 124(495), 823–847.
- Thompson, M. (2008). *Life and action: Elementary structures of practice and practical thought*. Harvard University Press.
- Tschaepfe, M. (2014). Guessing and abduction. *Transactions of the Charles S Peirce Society*, 50(1), 115–138. <https://doi.org/10.2979/trancharpeirsoc.50.1.115>
- Twardowski, K. (1911). Actions and products. Some remarks on the borderline of psychology, grammar, and logic. In J. In, Brandl, & J. Woleński (Eds.), *On actions, products, and other topics in philosophy* (pp. 103–132). Rodopi.
- van der Schaar, M. (2006). On the ambiguities of the term judgement. An evaluation of Twardowski's distinction between action and product. In ŁD. In & A. Chrudzimski (Eds.), *Actions, products, and things. Brentano and polish philosophy* (pp. 35–53). Ontos.
- Vermazen, B. (1985). Negative acts. In B. Vermazen & M. B. Hintikka (Eds.), *Essays on Davidson: Actions and events* (pp. 93–104). Oxford University Press.
- Woodfield, A. R. (1994). Stage-setting in intentional discourse. In B. Smith, & R. Casati (Eds.), *Philosophy and the cognitive sciences: Proceedings of the 16th International Symposium* (pp. 294–305). Holder-Pichler-Tempsky, Vienna.
- Yamada, K., & Mukaidono, M. (1993). *Recognizing intentions by fuzzy abductive reasoning*. Paper presented at the Fifth IFSA World Congress, Seoul.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.