Reference and Intuitions

Introduction

Our intuitions about reference are often seen to be a crucial source of evidence for theories of reference. For example, Mallon et al. (2009) argue that in finding the correct theory of reference, philosophers are in fact *committed* to the method of cases:

> *The method of cases:* The correct theory of reference for a class of terms *T* is the theory which is best supported by the intuitions competent users of *T* have about the reference of members of *T* across actual and possible cases. (Mallon et al. 2009, 338)

They even go as far as suggesting that if the method of cases would prove to be unreliable, the most prudent consequence to draw would be to "to give up on the idea that the search for a substantive theory of reference is a viable enterprise" (Mallon et al. 2009, 342) and instead endorse some form of deflationism about reference.

This is certainly an overdramatic characterization of the role that intuitions play in philosophical theorizing, particularly in the philosophy of language. While Mallon et al. claim that they "have no idea what other considerations philosophers of language might appeal to" (Mallon et al. 2009, 343) when justifying their theories, we should like to remind them that *they themselves* make use of such other considerations in that same paper just a couple of pages later, when they argue that a pluralistic view on reference would predict an implausible amount of verbal disagreements. Theories of reference are typically supposed to be able to explain aspects of linguistic understanding, communication and representation. Whether a given theory can in fact explain these aspects and whether it can explain these better than its competitors is a rich source of such "other considerations" that philosophers of language use.

However, it is indeed widely agreed that intuitions play *some* evidential role in the philosophy of language. What is not widely agreed upon is why they play this role, whose intuitions should matter, and which kind of intuitions these are. For example, Mallon et al. 2009 seem to think that philosophers use intuitions as evidence because there is no alternative. If there is no way to independently train or tutor your intuitions, then maybe it doesn't matter much whose intuitions you consult, and if the intuitions of laypersons vary dramatically then this speaks against the method of cases in general.

Michael Devitt (2015, 2006), on the other hand, does believe that, besides intuitions, also other considerations matter. But if there is more than just untutored intuitions to go by, then maybe there can be experts about reference that are better informed by better previous theorizing or training and consequently have better intuitions. These are then the intuitions that should matter most as evidence for and against theories of reference. If it is found that the intuitions of lay people vary a lot, then this doesn't by itself speak against the reliability of

the intuitions of experts. This latter argument is one version of the so-called "Expertise Defence" against the experimentalist challenge that Mallon et al. (2009) pose for the method of cases.

A further disagreement among philosophers in this debate concerns the relationship between the intuitive judgments on the one hand and the facts these judgments are supposed to be about on the other. Some philosophers (again, for example, Michael Devitt) see the method of cases in the philosophy of language to be in this respect very similar to the method of cases in other areas of philosophy or even in the natural sciences. There is a certain objective fact, for instance, whether a certain fossil is a pig's jawbone (to use one of Devitt's examples), and an expert paleontologist may make a reliable judgment about whether the fossil she is looking at is indeed a pig's jawbone. Experience with identifying jawbones and having more knowledge about them can make you better in getting these facts right. That's why we may rely on an experienced paleontologist's intuitive judgment in such a case over the intuitive judgment of a random layperson. Likewise, if we think that philosophers have reliable intuitions about reference, then that too is due to the fact that they have knowledge of relevant theories and a lot of experience with the metalinguistic task of identifying what words of certain expression types refer to.

This contrasts with the view (implicit in Mallon et al. 2009, explicit in Marti 2009) that the source of the (purported) reliability of our intuitions about what terms in an actual or hypothetical case refer to is not our experience with metalinguistic tasks or our knowledge of metalinguistic theories, but our linguistic competence (which we, presumably, fully acquired at a relatively early age). At the same time, the facts that the intuitive judgments are about, e.g. what a term of a certain class in fact refers to in a certain case, are themselves arguably grounded in that same linguistic competence. On this view, intuitive judgments in philosophy of language enjoy an authority that intuitive judgments in other areas maybe lack. At the same time, experts do not necessarily make better such judgments simply because they know more --- what is required for the reliability of the judgment is primarily linguistic competence and this is shared by laypersons and experts.

Thus, the relation between intuitions and reference is not straightforward. Which of these views is right? Are facts about reference indeed grounded in individual linguistic competence? How does that square with the widely held view that reference is externally determined and that what an expression refers to may be fully independent from what even very competent speakers believe about the reference of their terms? Furthermore, even if it is the case that facts about reference are grounded in individual linguistic competence, why should we think that this will result in reliable judgments?

In the next sections we will take these questions up in the following order: in section (1) we will contrast two views about the relationship between individual competence and facts about reference. On - what we call - the meta-externalist view, the two may be quite independent; on the meta-internalist view, by contrast, facts about reference are determined by individual psychological facts. In section (2) we will then explore how, from a meta-externalist point of view, the relationship between intuitions and reference would look. In section (3) we will do the same from a meta-internalist point of view. After clarifying the relationship between intuitive competences and intuitive judgments, we conclude tentatively that, on the meta-

internalist view, intuitive judgments in the philosophy of language may enjoy a more privileged status than intuitions in other areas.

1. Meta-Externalism & Meta-Internalism

How are the facts about reference related to facts about linguistic competence, or facts about the individual psychology of speakers more generally? Here, a distinction can be made between two fundamentally different conceptions. This distinction is often not explicitly drawn, but it has far-reaching implications on the methodology of theories of reference, and on the proper role (if any) of intuitions in it. In Cohnitz & Haukioja (2013), we label the two conceptions *meta-internalism* and *meta-externalism*.

Just as the familiar distinction between semantic internalism and semantic externalism, the meta-level distinction has to do with the question of whether factors internal to a speaker are sufficient for determining some (meta)semantic phenomenon. The distinction between semantic internalism and externalism, extensively discussed since the 1970's, concerns the question of whether the *extension* of a linguistic expression, as used by a speaker, is determined by that speaker's (narrow) individual psychology; according to internalism, it is, according to externalism, it is not. Let us call this distinction the *first-level* distinction, and the opposing views *first-order* internalism and externalism: Putnam's natural kind externalism and Burge's social externalism are familiar examples of first-order externalism, while traditional descriptivism would be an instance of first-order internalism.

The meta-level distinction concerns the following question: what makes it the case that a given (first-order internalist or externalist) theory is true of particular expressions that a speaker uses? Again, an internalist and an externalist answer is possible: a meta-internalist will hold that the question of which theory of reference holds of a given expression, as used by a speaker (and thereby the truth of first-order internalism or externalism concerning that expression), is determined by the speaker's (narrow) individual psychology, while a meta-externalist will argue that this is, at least in part, determined by external factors.

While the first-order distinction is concerned with what determines the extension of a term, the meta-level distinction is concerned with *how that extension is determined*. These two issues are often not distinguished from each other with sufficient care, and it is therefore not always apparent whether even much-discussed views in meta-semantics are committed to meta-internalism or meta-externalism (but we will discuss what we take to be fairly clear cases below).

Both internalism/externalism distinctions can be illustrated in terms of what is or is not possible about internal duplicates. First-order internalism claims, and first-order externalism denies, that the referents of expressions uttered by internal duplicates always coincide; meta-internalism claims, and meta-externalism denies, that the referents of expressions uttered by internal duplicates are always determined in the same way, and hence that the same theories of reference are true of the relevant expressions.

It is crucial to notice that the two distinctions are logically separate. In particular, first-order externalism does not entail or presuppose meta-externalism: indeed, in our (2013) we argue for a combination of meta-internalism and first-order externalism (see also Biggs and Dosanjh, this volume). On this combination of views, first-order externalism is true of at least some of our referring expressions we use, but the fact that it *is* true of a given expression, as used by a particular speaker at a particular time, is determined by the individual psychology of the speaker in question. As will become apparent below, on a meta-internalist view the truth or falsity of first-order views is an empirical question concerning systematic patterns of dispositions among actual speakers; what is crucial to note here is that there is no *logical* entailment from the meta-level views to the first-level views.

2. Meta-Externalism and Intuitions

As we said, meta-externalism denies that the (narrow) psychological states of a speaker determine which theory of reference is true of the expressions used by that speaker: external factors also play a role in determining this. In this section we will look at some candidates for what these external factors could be and discuss in what way intuitions still might play a role in investigating which theory of reference is correct.

The candidates we look at are "ideal-types" in the sense that they are relatively schematic, while "real-life" theories may be more subtle and sophisticated. This is fine for our purposes here: we do not here try to show that meta-externalism is mistaken, we are merely providing an overview of the complex role that intuitions can play in investigating theories of reference.

2.1 Platonism

The first candidate we want to consider is what may be called reference platonism. According to such a view, the relation between expression types (say, natural kind terms) and object types (say, natural kinds) is, as a relation between abstract objects, itself an abstract object and thus independent of any empirical matters. The independence runs both ways, of course: the nature of the reference relation is independent of speaker dispositions, empirical facts about use, etc., and also causally isolated from affecting those dispositions. This view is meta-externalist, since it locates the facts that determine which theory of reference is correct outside the narrow psychological states of speakers, it places them instead in a third, platonic realm. The proper way to investigate semantics is then an *a priori* investigation of these abstract metaphysical facts. This is a non-naturalist conception of the philosophy of language, as envisaged by, for example, Jerrold Katz (1990).

On such a non-naturalist conception, philosophy is after synthetic a priori truths (such as the truth about the nature of the reference relation) with the help of *rational intuitions*. When and why rational intuitions are a reliable guide to synthetic a priori truths is then to be sorted out in a non-naturalist epistemology. Intuition is then often understood in parallel to perception. According to such a view, intuition allows us to "see" with the mind's eye into that third, platonic, realm. Such a non-naturalist epistemology then needs to explain how we can

distinguish between intuiting (in the relevant way) that something is the case and merely believing it. Distinguishing features of rational intuitions can be sought in the phenomenology of these intuitions. For example, intuitions may present their content as (necessarily true). The method of cases is then a systematic way of eliciting these intuitions, as part of a more general non-naturalist methodology in philosophy.

While the role of intuitions for the study of reference is clear on this conception (in fact, on this conception there is no other way to study the reference relation, given the construal of it as a non-natural subject matter), the epistemology that would justify this approach is, we believe it is fair to say, less than clear. Katz himself, who argues for the view by arguing against the tenability of the naturalist alternative, explicitly admits that he lacks a positive account (Katz 1990, 313).

2.2 Reference as a natural phenomenon

A meta-externalist account doesn't have to be anti-naturalist, of course. On a naturalist, meta-externalist view (exemplified by Devitt 2006, 2015 and elsewhere) the reference relation is a relation between physical events (utterance tokens, patterns of use, etc.) and objects in the world, to be studied empirically like all natural phenomena. Intuitions may still have a role to play in the study of reference, at least in the early stages of the inquiry (similarly as in naturalized epistemology, cf. Kornblith 2002). However, "intuitions" are now not the rational intuitions of the non-naturalist, but rather ordinary "central-processor" judgments that are laden with background knowledge and experience (in that sense they are not *sui generis* experiences). The more experience the intuiter has, and the better her internalised background knowledge is, the more reliable these intuitive judgments are likely to be. Thus, the expert's intuitions - that is, the expert's judgments concerning what a given referential expression refers to in a given situation - are more trustworthy than the non-expert's corresponding intuitions. However, a serious study of reference should eventually move beyond the reliance on intuitions (even the experts'), and study reference more directly by empirical means.

In contrast to the platonist conception, intuitions are here not the only evidence that we can use for assessing theories of reference: they are not even the best evidence to consult. After all, the exact provenance of our intuitions is opaque, we can only hope that experience and background knowledge have shaped them into a reliable indicator of the reference relation. Unless we have independently confirmed that our intuitive central processor judgments tend to be right, we should rather rely on other ways of finding evidence about reference.

2.3 Inscrutability

Both conceptions that we have considered so far, the platonist and the naturalist, hold that there is a stable phenomenon, reference, that can be systematically studied. Meta-meta-semantic considerations (that is, considerations about what determines the meta-semantics of terms) might lead one to abandon that view, though. On Herman Cappelen's meta-meta-semantic view, reference is determined by - what is probably - a complex net of linguistic interactions (Cappelen 2018, 63). Which these are, however, is too complex to pin down. The view is meta-externalist, since it locates the facts that determine how the reference relation operates outside of the speaker, in the linguistic community as a whole. Speaker

intuitions are therefore also not authoritative for how expressions refer. In principle, we can be vastly mistaken about how the reference relation operates. Cappelen writes:

> Most or even all speakers of the language can believe that a predicate F applies to an object, o, but be wrong. They can all want o to be in the extension of F, but wanting o to be F doesn't make it so. They can all be disposed to apply F to o even though o isn't F. (Cappelen 2018, 63)

The only reliable "intuitive" claims about reference are purely disquotational observations such as that "cat" refers to cats (Cappelen 2018, 83). On this view, intuitions about reference have absolutely no evidential value for theories of reference. On the other hand, there isn't much to find out either: according to Cappelen, reference is inscrutable and too messy to fit in a theory.

At best, there is one role that intuitions can play: namely show us that more substantial theories of reference are mistaken. Cappelen's deflationist view is, after all, itself based on thought experiments by Kripke, Putnam, Burge, and Williamson. But these are all thought experiments that present counterexamples to substantial theories rather than establish positive substantial theories of their own.

3. Meta-Internalism and Intuitions

On the meta-internalist picture, many of the considerations mentioned above can also apply. In particular, the meta-internalist can agree with the naturalist meta-externalist that experience can lead to expertise that allows for making reliable judgments about how words in fact refer, only disagreeing about what ultimately constitutes the *subject matter* of these judgments. Moreover, a meta-internalist, may, just as Cappelen, end up doubting that there is enough systematicity in the reference-determining facts for there to be a stable phenomenon of reference in the first place, only disagreeing about where we should look for such reference-determining facts.

However, meta-internalism also holds that it is our individual linguistic competence that grounds the reference relation. To understand how that allows intuitions to play another role in the investigation of reference, we need to clarify what we can mean by "intuitions" here.

3.1. Different kinds of "intuitions"

The method of cases is supposed to elicit intuitive judgments about what words mean in certain hypothetical utterance situations. Typically, a hypothetical scenario is described by stipulating certain facts about the utterance situation and (perhaps) about the speaker. If the method is applied in order to test theories of reference, the intuitive judgment elicited is typically supposed to be about what an expression refers to, or what expression would be correct to use in the hypothetical situation described. That is how the familiar examples by Kripke (e.g. the Gödel/Schmidt-case) and Putnam (e.g. H2O on Earth vs XYZ on Twin Earth) work. However, what this task actually involves can be understood in various different ways, and some of the conflicts about the role and value of intuitions for assessing theories of

reference seem to us to be due to an insufficient appreciation of these differences. To clarify this, we shall in the next two subsections distinguish between different notions of "intuition", and then return (in 3.2) to how we think the role of intuitions in such thought experiments should be understood.

3.1.1 Intuitions and intuition reports

The metaphilosophical discussion of intuitions typically focuses on "intuitive judgments", that is, on a certain type of propositional attitude the content of which can linguistically be expressed by a that-clause. But this runs together the *outputs* of an intuitive capacity with the linguistic *report* of it. It is helpful to first distinguish intuitive capacities and the outputs of these capacities. We can do a lot of things intuitively: we can intuitively produce and interpret utterances, we can intuitively estimate the distance of an approaching vehicle, we can intuitively predict the trajectory of a thrown baseball. These are intuitive capacities in the sense that we can exercise them without reasoning or conscious reflection: they are spontaneous, effortless and "automatic". The outputs of intuitive capacities can be of a wide variety: they can be expectations and beliefs, but they can also be feelings or certain motor-responses, for example when a native speaker of English says the word "yes" as a spontaneous expression of agreement with her interlocutor in a conversation in English.

As this list shows, not all outputs of intuitive capacities are judgments or even have (partial) propositional form. But that doesn't mean that we can't *report* them with the help of a that-clause. Let us consider the intuitive capacity to catch a ball. Reed et al. characterize that capacity as follows:

> [The skill] gives rise to a phenomenal sense of intuition. If you know how to catch and a ball is thrown towards you, you get an immediate feeling that you should run backwards or forwards to catch it. You do not do any conscious computation. (Reed et al. 2010, 64)

Here, the output of the intuitive capacity is a feeling that is triggered by certain cues. Of course, when presented with those cues (or shortly afterwards) one can try to report what that feeling was with a that-clause (e.g. 'I have the intuition *that I have to run forwards to catch the ball.*') Even if that intuitive capacity is reliable (people catch balls when provided with those cues), it is not thereby guaranteed that the reports of the outputs of that capacity are accurate. As Reed et al (2010) show, in the case of the intuitive capacity of ball-catching people are relatively bad at reporting the outputs of their capacity. This might be due to the fact that the relevant outputs are in part sensorimotor reactions that are not accessible to consciousness. Arguably, the outputs of our intuitive capacity to interpret expressions in utterances is more reliable, since these are accessible to consciousness (for example, upon hearing and understanding an utterance you can consciously reason over its content parts, e.g. upon hearing "Jim is in Barcelona", you can infer that Jim is in Spain). Thus, we can distinguish between feelings, seemings and various kinds of propositional attitudes as the outputs of an intuitive capacity and the reports of these outputs (and there is an open question about the reliability of the reports concerning the outputs which is independent of the relevant reliability or quality of the outputs). Data about the outputs of intuitive capacities

may be relevant for theories of reference, even if it turns out that we are not reliable in reporting them: in this case they should be studied by other means.

3.1.2 First- and second-level intuitions

A second important distinction concerns the subject matter of the intuition in relation to the subject of study. Let's assume that the subject of study is itself an intuitive capacity - for example when you study how people intuitively catch balls or how people intuitively ascribe beliefs and desires to others, etc. In this case, intuitions - as the outputs of the capacity that you are trying to understand - are constitutive of the subject matter of the theory you are trying to develop. In line with the terminology that we developed in our (2015) we call that the "constitutive role" of intuitions. The intuitions that play that constitutive role, we will call "first-level intuitions" - these are the outputs of the intuitive capacity under study.

Now, in addition to these first-level intuitions, one can also have second-level intuitions, i.e. intuitions about what the outputs of an intuitive capacity are. Thus, second-level intuitions are intuitions about intuitions. For example, a researcher developing a theory of how people intuitively ascribe mental states to others may have intuitions about how they do that. These intuitions may be her starting points for theory building, but they are different from the intuitions that constitute the subject matter of that theory, namely the intuitive ascriptions of mental states themselves. Our researcher will also have intuitions of the latter kind. Our researcher can use her first-level intuitions as evidence for her theory, if she has reason to believe that the intuitive capacity is universally shared (and that she possesses the capacity), she can use her second-level intuitions as evidence to the extent that she has reason to believe that her intuitions are reliable.

3.2. First-level intuitions and meta-internalism

As we saw earlier, meta-internalism holds that the facts about reference - which theory of reference is true of a given referring expression - are determined by the internal states of the relevant speaker at the time of utterance. Meta-internalism, as such, is not committed to any specific view regarding *which* internal states of a speaker determine the facts about reference. The most natural view about this question, and the one that we have defended at length in our (2013) and (2015), is that it is the speaker's dispositions to apply and interpret expressions of the relevant type, as well as her dispositions to revise her application and interpretation in response to relevant new information, that determine how the expression in question refers (among other things, whether a first-order internalist or externalist theory of reference is correct of that expression).

Such dispositions to apply and interpret linguistic expressions, as well as to revise one's application and interpretation, are "intuitive" in the sense discussed above: they are spontaneous, and not the outcomes of a conscious reasoning process. Adopting the terminology introduced in the previous subsection, we can then say that, on this view, the speaker's first-level intuitions constitute the facts about reference: theories of reference are really theories about (presumably) relatively stable and systematic patterns of first-level

dispositions possessed by the relevant speakers, to apply and interpret the relevant referring expression. The relevant first-level intuitions here include dispositions to use one name rather than another to convey information about a given individual, dispositions to interpret a general term, when applied to an object, as attributing one property rather than another to it, and so on.

However, the set of relevant first-level intuitions is not limited to such application and interpretation dispositions, but also includes the speaker's dispositions to revise her usage in response to new information. The distinction between first-order externalist and internalist theories arises within meta-internalism as a distinction between different kinds of dependence relations holding between the relevant speaker's first-level intuitions and her beliefs concerning external matters of fact. For example, to say that (first-order) social externalism is true of an expression, as used by a speaker, is to say that that speaker's application and interpretation of the term is, in complex but systematic ways, dependent on her beliefs regarding how other members of her speech community use the same term. (Meta-internalism does not require that ordinary speakers, in order to use a term with its publicly determined extension, *have* beliefs about how, say, experts use a given term - indeed, often they have no definite beliefs, or even mistaken ones, about this. What meta-internalism *does* require is that such speakers are *sensitive* to new information about this; that they would revise their own use as a consequence of acquiring or revising their beliefs about the experts' use.) To say that (first-order) internalism is true of an expression, as used by a speaker, is to say that her application and interpretation is *independent* of the speaker's beliefs concerning such external factors (including, but not limited to, her beliefs about other speakers). And so on, for any first-order internalist or externalist theory of reference: on this understanding of what intuitions are, there is a very direct, constitutive, relationship between intuitions and the facts about reference.

If intuitions are seen as constitutive of the facts about reference, in the above sense, the use of both armchair methods and experimental methods in theorizing about reference can be defended. The relevance of experimental results falls directly out of the meta-internalist view: if theories of reference are really theories about systematic patterns of intuitive responses among speakers who use the expression in question, empirical evidence about what kinds of patterns of intuitions ordinary speakers in fact have is obviously relevant. At the same time, the kinds of thought experiments typically used in theorizing about reference can be seen as vehicles for eliciting first-level intuitions. That is, the armchair theorist is not, at least primarily, evaluating hypothetical cases on the basis of empirical generalizations about linguistic behaviour, but rather on the basis of her own linguistic competence.

For example, someone contemplating the Twin Earth thought experiment is, in our view, really engaged in a kind of mental simulation: she is imagining herself, or any of her linguistic peers, as coming across a watery liquid on Twin Earth, and activating the relevant parts of her own linguistic competence. On first contact with Twin water, she would be likely to apply the term "water" to it, but - if her first-level intuitions line up with Putnam's - she would also be disposed to retract her usage of "water" to Twin water upon finding out the relevant chemical facts. The thought experiment, if successful, points our direction at precisely those first-level intuitions which, according to meta-internalism, make first-order externalism (more precisely, natural kind externalism, or physical externalism) true. It is true that we, as theorists, often find it natural to report the outcomes of our thought experiments in

metalinguistic terms ("The term 'water' does not refer to XYZ"; "The Twin English term 'water' does not mean water", etc.), but these statements are generalizations over a wide range of first-level intuitions: the primary purpose of thought experiments like Twin Earth is to probe our own first-level intuitions, and point our attention at systematic patterns in these intuitions.

The theorist's own judgments about hypothetical cases will then be admissible as data for theories of reference, under two conditions. First, the theorists' own first-level intuitions must be representative of the linguistic community for which the theory is supposed to hold. Second, the theorist's reports of her own first-level intuitions must be accurate. There may be reason to think that experienced theorists in fact do satisfy both conditions: there may even be reason to think that they do so to a greater extent than non-experts: a version of the expertise defence is, arguably, available to the meta-internalist. However, we should keep in mind that both conditions are empirical hypotheses, and as such always subject to empirical repudiation.

Finally, it should be noted that meta-internalism is centrally motivated by considerations having to do with linguistic communication, rather than general claims about intuitions and facts: the arguments for meta-internalism cannot be translated into arguments for analogous views about the constitution of, say, moral or epistemological facts. Thus, the constitutive relationship between intuitions and facts accepted by meta-internalists may give intuitions a privileged status as data in philosophy of language, compared to other areas of philosophy. At the very least, analogous positions in other areas of philosophy would require an independent argument, and are likely to be perceived as far more radical than meta-internalism about reference is.

References

Cappelen, Herman: *Fixing Language*, OUP: 2018.

Cohnitz, Daniel and Haukioja, Jussi (2013): Meta-Externalism vs Meta-Internalism in the Study of Reference, *Australasian Journal of Philosophy*, 91, 475-500.

Cohnitz, Daniel and Haukioja, Jussi (2015): Intuitions in Philosophical Semantics, *Erkenntnis*, 80, 617-641.

Devitt, Michael (2015): Testing Theories of Reference, in: J. Haukioja, *Advances in Experimental Philosophy of Language*, London: Bloomsbury, 31-63.

Devitt, Michael (2006): *Ignorance of Language*, OUP.

Katz, Jerrold (1990): The Metaphysics of Meaning, Cambridge, MA: The Mit.

Kornblith, Hilary (2002): *Knowledge and Its Place in Nature*, OUP.

Mallon, R., Machery, E., Nichols, S., and Stich, S. P. (2009): Against arguments from reference, *Philosophy and Phenomenological Review*, LXXIX, 332–356.

Martí, G. (2009): Against semantic multi-culturalism, *Analysis*, 69, 42–48.

Reed, N., McLeod, P., and Dienes, Z. (2010): Implicit knowledge and motor skill: What people who know how to catch don't know, *Consciousness and Cognition*, 19, 63–76.