ORIGINAL RESEARCH

Recognition

Christina H. Dietz[1]

Abstract

This paper offers an account of recognition and its relation to knowledge. One important observation is that while 'know' is a stative verb, 'recognize' is an achievement verb. A second is that 'recognize' is knowledge entailing, both when combined with a complementizer phrase and when combined with a noun phrase. The behavior of the latter kind of construction is particularly subtle and is the main focus of this paper. This paper ends with an interesting puzzle about object recognition.

1 Introduction

Philosophers often use the verb 'recognize' in philosophical discourse but there has been surprisingly little discussion of the phenomenon of recognition itself.[1] The purpose of this paper is to remedy that gap.

In section one, I will distinguish various uses of the verb 'recognize' in ordinary language as a prelude to identifying the phenomenon I wish to focus on. In section two, I will examine Alan Millar's account of the role of recognition in perception—-this will highlight the importance of keeping track of the distinctions presented in section one. Sections three and four turn to the central focus of this paper – namely, providing a detailed analysis of those uses of 'recognize' that take a noun phrase complement which picks out a particular object.

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[1] A particularly well known case in point is Grice's use of 'recognize' in his theory of meaning (1957).

✉ Christina H. Dietz
chdietz@acu.edu.au

1 Dianoia Institute of Philosophy at Australian Catholic University, Level 5, 250 Victoria Parade, East Melbourne, VIC 3002, Australia

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2 Ground-Clearing: some uses of 'Recognize'

There are two central uses of the verb 'recognize' in ordinary English. Perhaps the most common use is exemplified by expressions where 'recognize' takes a noun phrase complement (NP) (e.g. 'She recognized Adam' or 'John recognized my dog'). Another use occurs when the verb 'recognize' takes a that-clause complement (e.g. 'She recognizes that he is unhappy').[2] The exercise of distinguishing these uses is a good basis for making some preliminary observations about the states these expressions describe.

2.1 Recognizing-that

First, it seems that 'S recognizes that P' entails 'P'.[3] Consider the infelicity of claims of the form, 'John recognized that the car was on fire but the car was not on fire.' The case that 'S recognizes that P' entails 'S knows that P' is similarly strong, since the result of combining a recognize-that ascription with knowledge denial is similarly problematic. One cannot felicitously say that *John recognizes that Pluto is a dog, but John does not know that Pluto is a dog.*[4]

Second, there is an interesting contrast between 'recognizing-that' and other knowledge-entailing verbs. A variety of verbs entail knowledge but also yield substantive additional information when combined with that-clause complements. For example, in making a p-entailing emotional state ascription such as, 'John regrets that P', we convey information about what John knows (the fact that P) as well as information about John's emotional response to P.[5] In the case of p-entailing perceptual state ascriptions, such as, 'John sees that the lights are on', we not only convey that John knows that the lights are on but also that he knows that the lights are on by way of vision.[6] Interestingly, in the case of recognition, it is far less clear whether 'John

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[2] 'Recognize' can also take a WH-clause complement (e.g. 'John recognizes *where* he is' or 'Jason recognizes *why* he is wrong'). These uses are intimately related to recognize that P constructions. For example, recognizing why the bridge fell down seems to be a matter of recognizing that P, where P is the answer to the why question (and will be along the lines of 'The bridge fell down because Q'). Meanwhile 'Sally recognizes who she is annoying' seems to be a matter of recognizing that Q, where Q specifies the contextually relevant answer to the question 'Who is she annoying?'.

[3] Philosophers often use the expression 'factive' to characterize propositional attitude verbs that have this p-entailing feature. Here, for example, is Williamson: 'Knowing. . is a factive attitude: one can know p only if p is true' (2000, p.14) Linguists, by contrast, tend to gloss 'factive' in a presupposition-theoretic way. This contrast is noted by Comesana and McGrath who argue that their thesis that certain states 'are not factive in the sense philosophers typically have in mind' is compatible with 'factivity in the linguists' sense: attributions of such states still presuppose the truth of the relevant proposition' (2014, 70). Of course, the thesis that the positive ascription 'S recognizes that P' both presupposes and entails P and is thus factive in both senses is certainly an option (though of course 'S does not recognize that P' will at most presuppose P). I use 'p-entailing' rather than 'factive' in the main text to avoid any unclarity.

[4] Unger (1979) and Williamson (2000) use tests like these to probe the entailments of various constructions.

[5] See Dietz (2018) for a detailed discussion of p-entailing emotional state ascriptions and their relation to knowledge.

[6] Note that there is more than one reading of 'S sees that P' but I take it that the primary use is meant to express that S knows that P by way of vision. See French (2013) for an elegant elucidation of the various

recognizes that the lights are on' conveys significant additional information beyond the fact that John knows that the lights are on.

Third, there appears to be some interesting semantic differences between 'know' and 'recognize' whether or not 'recognize' is paired with a complementizer phrase. 'Know' is a paradigm stative verb, and although 'recognize' is often classified as a stative verb,[7] it is far from clear that it should be categorized this way. In this connection, note that one standard test for whether a verb is stative is whether it would be infelicitous in the progressive. And yet, compare the felicity of (a) with the infelicity of (b):

a.   She is slowly recognizing that her student is a prodigious talent.
b.   She is slowly knowing that her student is a prodigious talent. #.

It is also standard to think that statives do not felicitously combine with *pseudo-cleft constructions* (constructions of the form, 'What he/she/they did was…') and yet, 'recognize' passes this standard test too. Compare,

c.   What he did was recognize that he needed help.
d.   What he did was know that he needed help.[8] #

Another reason to think that 'recognize' is often associated with an event rather than a state (unlike 'know') is how 'recognize' interacts with event-counting constructions:

e.   In the last week, I recognized several times that I was not drinking enough water.
f.   In the last week, I knew several times that I was not drinking enough water.[9] #

Following the taxonomy deployed by Vendler (1957) and Dowty (1979) it seems plausible that 'recognize' is an achievement verb (and indeed, Dowty explicitly lists 'recognize' as an example in this category). Like accomplishment verbs, achievement verbs encode a goal or endpoint. That said, while achievement verbs describe the end of a process, accomplishment verbs describe a process that includes the endpoint but is not limited to the endpoint.) The tests in Dowty (1979) clearly support the thesis that 'recognize' is an achievement verb. For example, while stative and accomplishment verbs like 'know' and 'build' may be combined with 'for an hour', achievement verbs do not. Consider:

g.   He knew for an hour that he was going to die.

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uses of 'sees that'.

[7] Here is one of many examples that I found that opt for this classification: https://continuingstudies. uvic.ca/elc/studyzone/410/grammar/stat.Interestingly, Vendler (1957, 144) seems to classify 'know' and 'recognize' together on the grounds that neither take the continuous form. As the examples that follow indicate, he may have been too quick here.

[8] Here I am applying some tests for statives from Dowty (1979, p.55). Another interesting contrast, though one I shall not dwell on relates to Vendler's (1957, p. 148) observation that 'I can know' has an "airy feeling" about it. "I can recognize" is not similarly airy.'

[9] Thanks to an anonymous referee for this point.

h.   He built a chair for an hour.
i.   She won for an hour. #.
j.   She recognized for an hour that she was not drinking enough water. #.

Dowty suggests that one contrast between accomplishment and achievement verbs is that accomplishment verbs are available to use as complements of 'finish'. Again, this test favors categorizing 'recognize' as an achievement verb. Consider,

a.   k. He finished building the house.
b.   l. He finished recognizing that he wasn't working hard enough. #.

Moreover, as with other achievement verbs, and unlike accomplishment verbs, 'recognize' does not combine well with 'studiously', 'attentively', or 'carefully'. Consider,

c.   m. He carefully built the house.
d.   n. She carefully recognized that she was doing well. #.

In sum, there is strong evidence that while 'know' is a stative verb, 'recognize' is an achievement verb. Thus, one cannot simply assimilate 'recognize that p' to 'know that p'. That said, it is very hard to contrive clear examples where one of the pair '*S recognizes that P*' and '*S knows that P'* is true but the other false. Tentatively, I'd like to suggest why this may be so: First, it is a lot easier to pull apart (i) 'At noon yesterday, I *recognized* that I was going to die this year', from (ii) 'At noon yesterday, I *knew* that I was going to die this year'. There is a natural reading of (i) that seems to require a transition to knowledge whereby recognition marks the point of said transition, while (ii) merely flags the presence of knowledge. By contrast, 'She recognizes' seems to merely convey that some such transition has occurred without saying when. It thus has something like the force of 'She has come to know'. (By comparison: (iii) 'Yesterday she did not smoke' says nothing about when she stopped, while (iiii) Yesterday she finished smoking' tells us when she stopped. By contrast, (v) 'She is finished with smoking' tells us very little about when she stopped.) If this is right, then it is unsurprising, even given the semantic contrasts noted above, that 'She recognizes that she has talent' is hard to distinguish truth conditionally from 'She knows she has talent,' on account of the fact that it is difficult to distinguish 'She knows she has talent' from 'She has come to know that she has talent'.

2.2 Object recognition

Let us turn to 'recognize NP' constructions. First, where the complement is a definite noun phrase, it is important to distinguish two kinds of recognize-NP constructions: the *particular-object use* and the *kind use*. Suppose John turns to Maria and says, 'We own that car!' There are two ways to interpret John's speech. On the particular object reading, we can hear his speech as suggesting that there is a single physical vehicle that both John and Maria own. On the kind-use reading, we can hear John as meaning to suggest that he and Maria own a car of the same kind. Similarly, in the case

of NP-recognition, if John says, 'I recognize that car!' we might interpret his speech as saying that either (i) he recognizes a particular vehicle (perhaps as the vehicle he owns) – call this 'object recognition' -- or (ii) that he recognizes the *kind* of car that it is (e.g., a 1957 Ford Thunderbird). To emphasize this contrast, consider the verb 'recognize' in the context of ornithology. An ornithologist has the sort of expertise that makes it possible to correctly identify the *kinds* that particular birds are (e.g., pigeons, crows, ducks, etc.) In the context where we say, 'Lonnie, the ornithologist, recognizes that bird' we usually mean that Lonnie recognizes which species the bird is (rather than a particular bird).[10] Of course, the two different uses of 'I recognize that bird' need not require that 'recognize' takes on two different meanings: The uses can plausibly be explained simply by the polysemy of 'that bird'.

There is another interesting contrast between two different ways of embedding *indefinite noun phrases* under 'recognize'. While 'S recognized a person at the party' communicates that there was a particular person that S recognized, there is a very natural reading of 'S recognized a genius' and 'S recognized a kind soul' that communicates no such thing. For example, Moltmann (1997) observes that 'When John talked to his wife yesterday, he recognized a genius' is not naturally heard as conveying recognition of his wife, but instead of 'a certain quality in his wife.' (1997, 43)[11] (Similarly, if you see a person that you do not recognize at all but think has the quality of being a genius, you can get away with saying, 'I recognized a genius!')

The exercise of distinguishing the different ways we talk about recognition (as flagged by the constructions we use) suggests that the question 'What is recognition?' is far too general to be a helpful theoretical starting point.[12] In what follows, I will primarily be interested in cases of object recognition described by 'recognize NP' constructions in which the noun phrase picks out a particular object.[13] But first let us

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[10] While there is both the kind and particular object reading of 'She recognized that car', it is (as a referee pointed out) far less obvious that there is a *kind* reading of 'She recognized Mary's car'. The natural explanation of this is that while it is easy enough to hear 'That car' as referring to a kind, it is much hard to hear 'Mary's car' in this way. That said, I don't think the contrast is hard and fast on account of the flexibility of the possessive. Suppose Mary draws a crow and Bill draws a dove. Someone can say, 'I recognize Mary's bird but not Bill's': Here recognizing Mary's bird is a matter of recognizing the species of bird that Mary drew. The referee also helpfully pointed out that there may be an interesting link between the kind reading and uses of 'recognize' with WH complements, so that 'She recognized that car' is tantamount to 'She recognized what that car is'. A good question here is whether the WH construction is more fundamental here such that the kind use involves an embedded question at some suitable level of analysis.

[11] The larger project of Moltmann's (1997) paper is to offer some new tests for intensional verbs that are then used to give a more expansive taxonomy of intensional verbs, coupled with a theory of their semantic workings. For example, one trait of intensional verbs that Moltmann notes is their lack of 'anaphora support'. In this case we cannot easily say, 'When John talked to his wife yesterday, he recognized a genius. Tim recognized her too.'

[12] That is not to deny there are some underlying commonalities to the various uses of 'recognize' that we have just looked at: the relation between the various uses seems far more intimate than that between the various uses of 'bank'. We have already seen one commonality -- 'recognize' persistently carries the traits of an achievement verb. But it would be disappointing if there was not more to be said than that. And indeed there is: I think that the phenomenon of knowledge provides something of a unifying thread and the remarks that follow will help to make the case for this.

[13] Given this restriction, the inference from 'S recognizes NP' to 'There exists something that is identical to NP that S recognizes' is generally unproblematic and in that sense the claim that the uses in question are existence entailing is relatively unproblematic. The only prima facie problem cases are ones where a

see how being careful about the above distinctions can make a difference to theorizing about or with the concept of recognition.

3 Recognition and Perceptual Knowledge: a Case Study

In his paper, 'How Visual Perception Yields Reasons for Belief', Millar (2011) suggests that recognition plays an important explanatory role in the acquisition of perceptual knowledge. In particular, Millar suggests that seeing that there are tomatoes in the basket (and thus, knowing that there are tomatoes in the basket) is primarily a matter of exercising some recognitional capacities (whereby one first recognizes tomatoes *as tomatoes*, baskets *as baskets*, etc.) (p. 333, 2011).[14]

Millar's discussion can serve as a kind of case study for how things can go awry when one is not careful about the distinctions presented in Sect. 1. I will not pursue the question of whether or not Millar's big picture explanation of how vision yields reasons for belief is theoretically promising. Rather, I will focus on exposing the dangers of using a crude notion of recognition (that ignores the distinctions of the last section) as a theoretical cog.

Millar argues for the importance of recognition to perception but it is unclear whether Millar is interested in promoting the explanatory importance of states described by the recognize-that construction, or the explanatory importance of states described by the recognize-NP construction (he relies on the somewhat artificial construction, 'recognizing *Fs as Fs*' instead.)[15] To illustrate the importance of tracking this distinction between recognizing-that and recognizing-NP, let us consider Millar's proposal with each interpretation in turn.

If Millar has the recognize-that construction in mind, Sect. 1 presents us with reason to think that it is unlikely that this suggestion will be illuminating. After all,

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noun phrases seem to pick out non-existent objects. One might look at a painting and say "I recognize Poseidon". Here a Meinongian might say that one recognizes something that does not exist. (Similarly, on the face of it, 'She worships Poseidon/a Greek God' does not entail that there exists something that is identical to Poseidon/a Greek God' that she worships. (This kind of example – in the indefinite version – is in Zimmerman 1993. One lesson that he draws is that a failure of existence entailingness does not suffice for being an intensional verb with the kind of non-specificity displayed by 'I want a horse', said in a setting where one wants no horse in particular.) Engagement with such examples would take me too far afield. Note that such examples do not make trouble for the knowledge connection defended later. Insofar as it is natural to say that 'I recognize Poseidon', it is natural to say 'I know who that is'.

[14] Millar (2011) writes, "…seeing that there are tomatoes in the basket is a matter of seeing the tomatoes in the basket, recognizing them to be tomatoes and in the basket. … That ability depends on being able to recognize tomatoes to be tomatoes from the way they look and being able to recognize baskets to be baskets from the way they look, and being able to recognize certain tomatoes and baskets to be such that the former are in the latter.' (p. 334).

[15] Note that the expression 'recognize x *as* F' can be used in two ways. First, one might express some kind of identity claim that is the basis for recognition. For example 'I recognize that person as the man who robbed the bank yesterday'. Second there is a special use having to do with acknowledging a person or thing as having a certain positive status: 'The government refuses to recognize the state as an independent state'. 'The government recognizes me as a citizen'. (In some cases one does not merely acknowledge but *confers* a certain status by a performative speech act using 'recognize': 'I hereby recognize you as….'). I shall not explore issues connected to this second use. To my ear, the sentence 'I recognize that thing *as a tomato*' sounds a little odd, since it does not neatly fit into either of these standard uses.

recognizing that P is more or less equivalent to coming to know that P. Thus, any suggestion that *seeing that P requires recognizing other propositions to be true* will be equivalent to the suggestion that seeing that P requires coming to know other propositions to be true. And if, following Unger (1979) and Williamson (2000), we maintain that seeing that P requires knowing that P, this amounts to the suggestion that knowing P via vision requires coming to know some other propositions to be true. Perhaps this can be argued for—-and indeed, it carries some initial plausibility—-but if so, it is always better to put this issue in a somewhat clearer way before offering some general argument for it.

It is more plausible that Millar's central idea concerns a recognition process best described using a recognizing-NP construction. But when so construed, it is radically implausible. After all, it is obviously *not true* that, in general, to see that an object is a certain way, one must recognize that object. Suppose Alan sees two things standing beside each other (call them, 'Thing One' and 'Thing Two') and Alan does not recognize either thing. Intuitively, Alan can still *see that Thing One is near Thing Two*, or *see that Thing One is red and that Thing Two is blue*. Consider an example that does not involve a singular thought about a particular object: When I look and I see that there are no rats before me, my seeing that *there are no rats before me* does not require that I recognize any object, or that I recognize rats *as rats*, or even that I recognize the rat species.

In sum, it is difficult to know what Millar meant by 'recognition' despite his earnest expectation that it could do important theoretical work for his view. Indeed, Millar's account of perceptual knowledge acquisition hinges on what he means by 'recognition' and the interest of his account rapidly dissipates once we try to clarify exactly what the central thesis about recognition is supposed to come to.

4 Knowledgeable-matching and context dependence

Let us now turn to the main topic of discussion—recognition claims of the form 'S recognizes NP' where the noun phrase picks out a particular object. What does it mean for such a claim to be true? In what follows, I will distinguish object recognition from *mere identification*, and argue that true ascriptions of the form, 'S recognizes NP' necessarily involve knowledge. I will also argue that the kind of knowledge that is involved in object recognition claims is importantly context dependent.

4.1 Identification and re-identification

Let us begin with the Strawsonian idea that *recognition involves re-identification*.[16] What are the truths behind this slogan? The basic idea of re-identification is that one has a stored representation, file, or tag for a particular object of experience X and when that object is presented by perception again, one has demonstrative access to that object. Whether one recognizes X will turn on whether one can make some sort

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[16] The construal of recognition as re-identifying objects played a pivotal role in Strawson's metaphysics. See, for example, *Individuals* (1959).

of identity claim which connects the stored representation of X to the second demonstrative representation of X. If the mind housed a homunculus, recognition would culminate in it having a revelation along the lines of, 'Ah-ha! A is identical to Dem!', where 'Dem' is some kind of demonstrative representation of X.[17]

It is important not to conflate recognition with mere identification. A genuine case of recognizing X will be, at a minimum, a case of *re-identifying* X. Suppose there are two windows that look out onto the same ship. The realization that both windows look out onto the same ship only suffices for identifying the ship that is presented though one window as being the same ship that is presented through the other. In this case, there is something wrong about saying that the realization that both windows look out onto the same ship is tantamount to recognizing the ship.[18] The scenario in which it is appropriate to say that one recognizes a particular ship is a scenario in which one encounters that ship and matches the perceptual representation of that ship to a stored representation of that ship.

4.2 Recognition-NP and Knowledge

What sort of epistemic status does an identity belief need to have in order to count as a genuine case of recognition? First, it seems obvious that the identity belief must be true. If I see Maria but falsely believe that I am seeing Sarah, I do not recognize Sarah (though I may have a false belief that I recognize Sarah). Further, there is a strong case to be made for the claim that recognizing-NP requires an identity belief that rises to the level of knowledge. Consider the following case:

Suppose Maria agrees to play the Cage Game. Maria stands in front of four dimly lit cages and the game begins. Maria's husband is in one of the four cages while the other three cages contains a man that is of similar weight, height, and appearance to her husband. Maria is told that her husband is in one of the four cages and if she cannot correctly identify her husband, they will keep him locked up for the rest of his life. Maria struggles to see any differences that might help her identify her husband but on an irrational hunch, she forms the true belief that the man in cage two is her husband. Given the details of the case, it would be a stretch to say that when Maria looked into the second cage, *Maria recognized her husband*.

If recognition requires something epistemically stronger than merely having a true identity belief, what should we say of the suggestion that the missing ingredient is *justification*?

Consider a modification of the case. Suppose a trick of the light made her husband's shirt (but not the other shirts) appear to be the very shade of pink that dominates his

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[17] Philosophers tend to find it natural to think of natural language sentences such as 'That is Mary' as semantically expressing such identities. But as Mikkelsen (2004) and Moltmann (2013) make clear, this is very tendentious. The neutrality of the pronoun 'That' counts against its referring to a person and indeed these authors offer alternative accounts (on Mikkelsen's account the referent is a property, on Moltmann's it is a presentational trope). In Moltmann, this is part of a larger vision according to which tropes are the direct objects of perception: uses of demonstratives that philosophers tend to count expressing identities are to be thought of instead as identifying an object with the bearer of a trope. What I say in what follows can readily be tweaked to accommodate this vision.

[18] Thanks to John Hawthorne here.

wardrobe. (In fact, it is a cream shirt illuminated by pink light.) On this basis, Maria points to the second cage and confidently exclaims, 'That is my husband!' Her belief is true, and given the perceptual appearances, her belief is justified too. But while Maria certainly takes herself to recognize her husband, there is still something deeply wrong about saying that upon looking into cage two, Maria *recognizes* her husband.[19]

In sum, a genuine case of object recognition requires more than merely having a justified true identity belief. Object recognition plausibly requires knowledge.

4.3 Context dependence

Genuine recognition requires knowledgeably matching the identity of a particular presented object, X, with the identity of an object picked out by a stored representation of X. But it is difficult to be specific about what kind of knowledgeable matching is sufficient on account of the fact that 'recognize-NP' is context dependent.

This context dependence can be illustrated by example. Suppose John believes that he is attending a birthday party for a celebrity dog that appears in movies and before he enters the party venue, he notices a dog rolling in the grass. Later in the evening, John and Maria look at the same dog at the party, and both speak truly when John says, 'I recognize that dog' and Maria says (of John), 'John does not recognize that dog.' Here are the facts of the case: It is true that John recognizes the dog at the party as *the celebrity dog he sees in movies*. In the context of John's speech, identifying the dog as *the celebrity movie dog* is sufficient for the truth of his speech. Maria speaks truly because in the context of her speech, 'John recognizes that dog' is true only if John identifies the dog at the party as the one that was seen rolling around in the grass outside.

The context dependence of object recognition ascriptions does not conflict with the idea that recognition requires knowing certain identity claims. But which identity claims are relevant will vary from context to context.

5 The sufficiency puzzle

I have argued that a genuine case of object recognition (described by the particular object use of the 'S recognizes NP' construction) necessarily requires that (i) the noun phrase picks out a particular object, X, and that (ii) S knowledgeably re-identifies X. I take it that knowledgeable re-identification roughly involves matching a stored representation of X with another representation of X (typically demonstrative). But what kind of knowledgeable matching is sufficient *for there being at least some context* in which an ascription of the form, 'S recognizes X' is true?

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[19] Note the contrast here between recognizing-NP and seeing-NP. While Maria does not recognize her husband, she does see her husband. While a knowledge constraint on recognizing-NP is well motivated, no such claim can be defended in the case of seeing-NP. For example, it might be that John sees a palm tree even if he is in a setting where he lacks the ability to determine whether or not he is hallucinating, and in a setting where he is unwilling to take appearances at face-value. In such a scenario, it does not seem as if John can know anything about what he sees because he cannot, at a minimum, know whether the palm tree exists.

My emphasis on re-identification suggests one kind of answer but it is easy to come up with cases where S knowledgeably re-identifies X but where there is *no* context in which 'S recognizes X' is true. Suppose John has poor long-distance vision. John can see that there is a person in the distance but cannot make out who the person is. When his friend with better vision tells John that the person in the distance is the person who served him pizza yesterday, John knowledgeably matches the identity of the blurry person in the distance with his memory of *the person who served him pizza yesterday.* If asked, John would not say that he recognized the person in the distance. He might just say something along the lines of, 'I can't recognize him from here but I know who he is.'[20] In this case, John has both (i) a stored representation: 'The person who served me pizza yesterday,' coupled with (ii) knowledge of the identity of the person in the distance ('*That person* is the person that served me pizza yesterday'). But the ascription, 'John recognized that person' (pointing to the person in the distance) is clearly mistaken. Moreover, the issue here is not merely a matter of context dependence for there seems to be *no* context in which we felicitously say that John recognized the person in the distance.[21]

We are thus presented with an interesting puzzle: What does it take for there to be at least *some* context in which a particular exercise of knowledgeable matching counts as recognition?

The volume of research dedicated to the phenomenon of recognition in psychology and cognitive neuroscience is so large that Mandler (2004, p.390) writes, 'a thorough review or summary of the literature would be, at least, Herculean.' But by way of suggesting a tentative answer to the sufficiency puzzle, I would like to advert to some themes in the empirical study of recognition in psychology and cognitive neuroscience.

Investigations concerning the functional and biological processes involved in recognition encourage the idea that so-called 'recognition memory' is not merely an aspect of one's general facility for storing and recalling information. Indeed, research seems to suggest that the ability to recognize a previously experienced stimulus is correlated with specific neural processes that engage a specific set of neuroanatomical locations. (See, for example, Brown & Aggleton 2001: Yonelinas 2002: Squire et al., 2007: Eichenbaum et al., 2007.) Although research is ongoing and by no means decisive—-we can arguably distinguish recognition-memory from other memory processes. For example, recognition-memory contrasts with other declarative forms of information-recall (e.g. remembering that one has plans for dinner), in part, because of the kind of information that recognition-memory processes (e.g. recognition is

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[20] In the good version of this case, the testimony prompts John to look more closely until he slowly comes to recognize the person in the distance. But this is very different from the bad case where John makes a knowledgeable match simply on the basis of testimony.

[21] Psychologists have sometimes neglected such cases when discussing recognition. For example, Mandler (1980, p. 252) counts *any process* that involves coming to know that an object was previously encountered as 'recognizing'. But it does not seem helpful (either as a point of English, or as a means of helpful psychological grouping of processes into kinds) to count a case where one learns by testimony that one has previously encountered a certain object as a case of recognition.

prompted by stimuli/cues) and in part, because of the mechanics underlying the success of the recognition process.[22]

The hypothesis I am envisaging is that 'recognition memory' picks out a joint in our psychological organization and does not merely correspond to a subclass of our memories. (By way of contrast: Beliefs about wine form a subclass of one's total beliefs but there is no plausibility to the claim that beliefs about wine form a relatively natural psychological kind.) Here is not the place to argue in detail for the thesis that there is a distinctive recognition-memory system of this sort. But if it is right that there is such a system, then there is arguably a good case to be made that what distinguishes fit candidates for object recognition from other cases of mere knowledgeable matching is that the recognition-memory system is responsible for the epistemic achievement of making the knowledgeable match.

In the pizza server case, it was not plausible that recognition-memory was responsible for knowledgeably matching the perceptual representation of the person in the distance with the stored representation expressed by 'the person who served me pizza yesterday.' Rather, testimony caused John to make the knowledgeable match. Paradigm cases of recognition will turn out to be the kinds of cases that have been of empirical interest—- that is, cases where recognition-memory is responsible for the epistemic achievement of knowledgeable matching.[23]

Of course, the suggestion here is tentative and depends on the contours of contemporary neuropsychology. But one might object to the approach of appealing to empirical claims about psychological organization here. Aren't I supposed to be offering a philosophical analysis of object recognition? But this objection is misguided. Just as chemistry helps to answer the question, 'What is water?' further empirical research will help to answer the question, 'What is recognition?' Moreover, one should not expect that the answers provided by empirical study will merely deliver contingent facts about recognition. Just as chemistry provided necessary *a posteriori* information about what is essential to water, we have reason to hope that the cognitive sciences will provide information about what is essential to recognition. Given the serious empirical interest in the recognition-memory system, the hypothesis that object recognition requires that the recognition-memory system is responsible for knowledgeable matching may very well withstand the test of further research.[24]

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[22] Squire, (2004, p.174) writes, 'The various memory systems can be distinguished in terms of the different kinds of information they process and the principles by which they operate.'

[23] One model of recognition (the dual process model) theorizes that recognition involves both a feeling of familiarity (of a perceived object) and identification of that object (a retrieval process). (A dual process model was first proposed in Mandler et al., 1969. See Yonelinas 2002, or Mandler 2008 for review.) One reason why a feeling of familiarity is (at best) an imperfect heuristic is that apparent-recognition cases (based on misperception) might produce a feeling a familiarity despite being completely erroneous. Another potential reason is that there may be cases of subconscious recognition that do not manifest conscious feelings of familiarity. Of course, that is compatible with the suggestion that a feeling of familiarity will typically be absent when knowledgeable matching is not performed by the recognition memory system.

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