Perceptual Concepts: In Defence of the Indexical Model

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1. Indexicality in language and thought

As expression types, indexicals do not refer. Only tokens of an indexical refer, because indexical reference is achieved through relations between tokens of the indexical and other entities in the context of tokening ; entities which gain their status as referent in virtue of standing in these relations to the relevant token. For example, a token of 'I' refers to the person who stands in the appropriate relation to that token in the context of tokening, that of being its utterer or producer ; a token of 'here' refers to the place where the token is produced ; and so on and so forth. Correlatively, only a token of an indexical sentence expresses a proposition. A type indexical, and the type sentence in which it occurs, only possess a linguistic meaning (a 'character'), which Kaplan describes as a rule mapping tokens of the indexical expression/sentence to the 'contents' they carry in context. Thus the character of 'I' is the rule that (a token of) 'I' refers to the person who produces it, the character of 'here' is the rule that a token of 'here' refers to the place where it is tokened, and so on and so forth. Since the character of an indexical encodes the relation that must hold between a token of the indexical and an entity for that entity to be assigned to this token as its referent, indexicals are aptly called 'token-reflexives' : their linguistic meaning reflects the relations which hold between their tokens and their referents.

Besides Kaplan (to whom we owe the character/content distinction) and Reichenbach (to whom we owe the idea of token-reflexivity), another theorist of indexicality who deserves mention is C.S. Peirce. Peirce introduced the type/token discussion into the philosophy of language, and he offered a tripartite classification of signs into icons, indices, and symbols. A symbol is a sign that signifies by convention, while an index signifies in virtue of 'existential relations' to entities in the context in which the sign is tokened. (Icons can be ignored in the context of the present discussion.) As a sign of fire, smoke is an index ; it signifies in virtue of its causal relation to fire. The word 'fire' is a symbol : it is a sign of fire in virtue of the

conventions of the English language. But there are also hybrid signs, that is, signs which belong to several categories simultaneously. Indexicals are a case in point. They are symbols, according to Peirce : like the word ‘fire’, they have meaning in virtue of the semantic conventions of English. That standing meaning corresponds to their kaplanian ‘character’. But in context, indexicals mean what they do in virtue of contextual relations holding between tokens of the indexical and their referent. Thus the relation between a token of ‘I’ and its referent is like the relation between smoke and fire. Since the reference of an indexical depends upon a contextual relation to other things in the context of tokening, indexicals are indices. Thus they are both symbols and indices, and belong to the hybrid category of ‘indexical symbols’. Their most interesting feature actually is the connection between the standing meaning of the type and the relational meaning of the token : what the meaning of the type encodes *is* the relation which holds between the token and the referent. That connection is most neatly captured through the Reichenbachian notion of ‘token-reflexivity’.

Figure 1 below summarizes what I call the indexical model, inspired from the work of Peirce, Reichenbach and Kaplan. The key features of the model are the following ingredients :

(i) There are *two semantic dimensions*, corresponding to character and content, or to standing meaning and reference, and they map onto the type/token distinction.

(ii) Reference is determined through *contextual relations* to the token (hence indexicals are context-sensitive).

(iii) The standing meaning is ‘token-reflexive’ — it reflects the relation between token and referent.

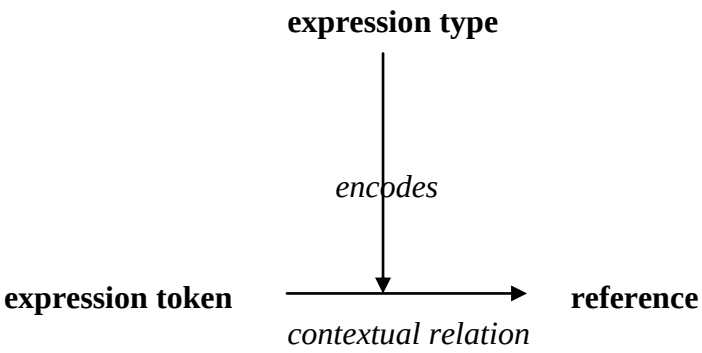

Figure 1 : The Indexical Model for Language

Does this model apply to thought ? Are there indexical concepts, just as there are indexical words ? It seems that, by using indexical sentences, we express indexical thoughts, i.e. thoughts involving indexical concepts (the concept of self, the concept of the present time, etc.). There is, however, a difficulty with this idea : evidently, the notion of conventional meaning does not apply in the mental realm. Still, I think we can make sense of the idea of indexical concept.

Indexical concepts, I suggest, are mental files which one opens when one stands in a certain sort of relation with some object (the referent of the file) : an *epistemically rewarding* (ER) relation, i.e. a relation such that, when one stands in that relation to some object, one can gain information from the object through the relation. The relation establishes a channel of information between the subject and the object. The suggestion, then, is that there are mental files which are based on such relations and whose role is to store the information one gains in virtue of standing in that relation to the object.

On this view, the type/token distinction applies to mental files. Mental files are typed according to the type of ER relation they exploit. Thus the SELF file exploits the relation to oneself (viz. identity) in virtue of which one can gain information about oneself in a special way, 'from inside' — a way in which one can gain information about no one else (as Frege puts it). My SELF file is not the same as yours, and they refer to different persons, of course, but they belong to the same type : they are both SELF files, unified by the common ER relation it is their function to exploit. We see that the *function* of files — namely, informational exploitation of the relevant ER relation — plays the same role as the conventional meaning of indexicals : through their functional role, mental file types map to types of ER relations, just as, through their linguistic meaning (their character), indexical types map to types of contextual relation between token and referent. The indexical model therefore applies to mental files, modulo the substitution of functional role for linguistic meaning (Figure 2).

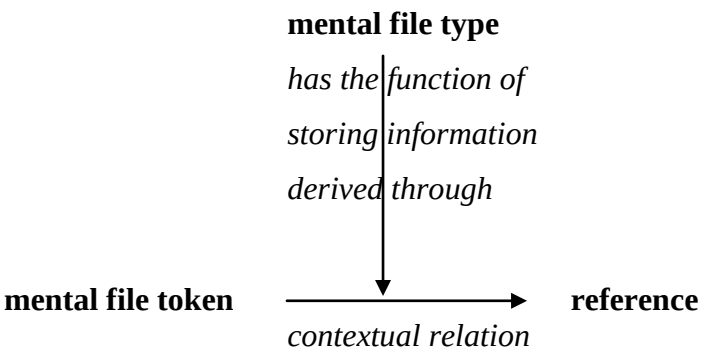

Figure 2 : The Indexical Model for Thought

On this view, a file (token) exists, or should exist, only as long as the subject is in the right acquaintance relation to some entity; a relation which makes it possible for him or her to gain information concerning that entity. Thus in virtue of being a certain person, I am in a position to gain information concerning that person through e.g. proprioception. The mental file SELF serves as repository for information gained in this way. The mode of presentation HERE which occurs in my current thoughts concerning this place is a temporary mental file dependent upon my present relation to the place in question. I occupy this place, and this enables me to gain information concerning it simply by looking and listening. The perceptual information thus gained goes into the temporary file, and, when the contextual relation on which the information link depends no longer exists, the file is suppressed. When I leave this place, I can no longer think of it as HERE; I have to think of it under a different mode of presentation. I can still think HERE-thoughts, but the HERE-modes of presentation occurring in those thoughts will be modes of presentation of different places, hence different modes of presentation (though modes of presentation of the same *type* as my present HERE-mode of presentation). Likewise, demonstrative files, such as the files THAT MAN or THAT THING, are based on certain contextual relations to objects, in virtue of which we can not only perceive them but also focus our attention on them in a dynamic and discriminating manner. When we are no longer in a position to perceive the object or to focus our attention on it, we can no longer think of it under the demonstrative mode of presentation which depends upon the existence of a suitable demonstrative relation.

What happens when the contextual relation to the object ceases to hold ? As I have just pointed out, I can no longer think of a place as HERE if I no longer occupy that place. And I cannot think demonstratively of an object which I can no longer perceive. In both cases, however, *another* mode of presentation — another file, based on another relation to the object — becomes available as a substitute. For example, when a demonstrative mode of presentation comes out of existence because the demonstrative relation on which it is based no longer holds, another relation comes to hold, in virtue of which I *remember* the object. On that relation another mode of presentation is based, distinct from but closely related to the original demonstrative mode of presentation. Following Evans (1982), let us call the new mode of presentation a 'memory demonstrative'. Just as demonstrative modes of presentation are based on demonstrative relations in virtue of which one can perceive the object, memory demonstratives are based on certain relations in virtue of which one can *remember* the object. Through our memories of the object, we can focus our attention on it even after the perceptual

encounter has ended. So we can say that the demonstrative THAT MAN [WHOM I SEE] is *converted into* a memory demonstrative THAT MAN [WHOM I SAW]. (Likewise, HERE can be converted into THERE, and NOW into THEN.) A first and rough answer to the question I raised ('What happens when the contextual relation to the object ceases to hold ?') is therefore the following : When the contextual relation to the object is severed, the temporary file based on it disappears, but the information stored in the file does not disappear : it is transferred into the new file.[1]

2. Papineau's objections

David Papineau has criticized the indexical model on the grounds that indexical words 'refer to different entities in different contexts of use', while a perceptual concept such as 'that bird', which Papineau himself is willing to construe as a mental file (see below), 'picks out the same bird whenever it is exercised'. Papineau therefore objects to the view that such concepts are 'demonstrative', and work like indexicals. They are, he maintains, more like proper names.

> You see a bird at the bottom of your garden. You look at it closely, and at the same time think *I haven't seen THAT in here before*. Later on you can recall the bird in visual imagination, perhaps thinking *I wonder if THAT was a migrant*. In addition, on further perceptual encounters with birds, you sometimes take some bird to be the same bird again, and can again form further thoughts about it, such as *THAT bird has a pleasant song*…
>
> In examples like this, I shall say that subjects are exercising *perceptual concepts*. Perceptual concepts allows subjects to think about perceptible entities. Such concepts are formed when subjects initially perceive the relevant entities, and they are re-activated by later perceptual encounters. (…)
>
> It is quite wrong to classify perceptual concepts as demonstratives. If anything is definitive of demonstrative terms, it is surely that they display some species of *characterlikeness*. By this I mean that the referential value of the term is context-

[1] Not only can an indexical file be converted into another type of indexical file, as in this particular case; two distinct indexical files can also be 'linked'. This is what happens when, for example, the subject recognizes a certain object which he perceives as being a certain object which he has perceived before and still remembers. Linking also enables information to be saved through transfer into another file.

> dependent — the sameself term will refer to different items in different contexts. However, there seems nothing characterlike about the kind of perceptual concept illustrated in the above examples. Whenever it is exercised, your perceptual concept refers to the *same* bird. (Papineau 2006 : 113)

What are perceptual concepts, then ? According to Papineau, they are mental files associated with specific 'sensory templates' :

> These templates will be set up on initial encounters with the relevant referents. They will then be reactivated on later perceptual encounters, via matches between incoming stimuli and stored template — perhaps the incoming stimuli can be thought of as 'resonating' with the stored pattern and thereby being amplified. (…) The function of the templates is to accumulate information about the relevant referents, and thereby guide the subject's future interactions with them… Note that this function of carrying information from one use to another highlights the distinction between perceptual concepts and demonstratives. Demonstrative terms do not so carry a body of information with them, for the obvious reason that they refer to different entities on different occasions of use. Information about an entity referred to by a demonstrative on one occasion will not in general apply to whatever entity happens to be the referent the next time the demonstrative is used. By contrast, perceptual concepts are suited to serve as repositories of information precisely because they refer to the same thing whenever they are excercised. (Papineau 2006 : 114-15)

In the passages I have just quoted, we can discern two distinct objections to the indexical model. The first I find not very convincing. Papineau argues that the very idea of a mental file or 'repository' in which information can 'accumulate' is incompatible with the indexical model, for accumulation of information requires stability, while indexicals are unstable (their referent systematically shifts). That objection can easily be disposed of, I think, because demonstrative concepts do achieve stability within the context in which they exist. It is simply not true that, on the indexical picture, demonstrative concepts shift their reference each time they are exercised. During an episode in which I look at a bird and entertain a demonstrative concept ('that bird'), I can form a number of demonstrative thoughts involving that selfsame concept which will then refer to the same bird, namely the bird to which I am demonstratively related for the whole duration of the perceptual episode. To be sure, when the

demonstrative relation comes to an end, the demonstrative concept disappears (or rather it is 'converted') but during the temporal interval in which the demonstrative relation holds, it can be exercised as many times as we wish, and the demonstrative relation exploited to accumulate information about the bird.[2] [3]

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[2] This shows that the type/token distinction is not sufficient and that we need a threefold distinction between type, token, and occurrence (Recanati 2006 : 24-25). We need to distinguish the file token, which (in principle) comes into existence as soon as the subject stands in the relevant ER relation to the referent and goes out of existence when the relation no longer holds, and a particular occurrence (or 'exercise' or 'activation') of the file token in a given thought. The reference of the file (token) remains stable across occurrences, contrary to what Papineau suggests.

[3] It is not an incidental feature of demonstrative concepts that they can persist through time in this manner, thereby making accumulation of information possible. It has often been pointed out that demonstrative thinking rests on an ability to keep track of objects, an ability that can only be exercised over time. Thus, according to Evans,

> We have to regard the static notion of 'having hold of an object at *t*' as essentially an abstraction from the dynamic notion of 'keeping track of an object from *t* to *t*'.' And the grasp, at *t*, of a thought of the kind suggested (…) requires a subject to possess at *t* an ability to keep track of a particular object over time. It is not precluded that one should have only a momentary grasp of [the] thought, for it is not precluded that, after an object has engaged with one's capacity to keep track of objects of that kind, one should lose track of it, and with it, the thought. Indeed it is an aspect of the capacity that the subject will, in general, know when this has happened. (Evans 1985 : 311)

Campbell and Burge make the same point, though for different reasons. According to Campbell (1987 : 287), being able to keep track of things over time is intrinsic to the capacity to use perceptual identifications of particular things in the context of observational judgments :

> One might be inclined to suppose that demonstratives should be thought of as instantaneous 'snapshots' of objects, because one can after all make such a judgment as 'that table is round' on the strength of a momentary glimpse of it. It may therefore be promising to suppose that someone could come to understand observational concepts without having the capacity to keep track of the things around him. The problem is that such a person would not be able to operate with the inferential structure that we use in marking the distinction between something's *seeming* to fall under an observational concept and its *really* doing so. (Campbell 1987 : 287)

Similarly, Burge claims that

> A certain sort of tracking is crucial in an individual's ability to perceive and have perceptual beliefs as of bodies. A sound basis for this requirement is that some such capacity is necessary for an individual to be representing bodies instead of events. (…) Bodies are perceptually distinguishable partly and fundamentally through their continuity of boundary integrity over time. An ability to track by way of such continuity is a basic differentiating ability. Tracking the movement of bodies is one

Papineau's second objection to the indexical model highlights the continuity between what I describe as different files, based on distinct ER relations : demonstrative files, the memory demonstratives they convert into, and a third type of file which I call recognitional files. (Recognitional files are based on the relation of *familiarity* with the object, a relation which holds whenever multiple exposure to the object has created in the subject a disposition to recognize it).[4] For Papineau there is just *one* file, which is initialized on the first encounter with the object, stored into memory (and possibility used in imagination), re-activated on further encounters as one recognizes the object as the same we experienced before, and consolidated as one becomes more and more familiar with the object. That this is always the same file, and not distinct files, is shown by the fact that information accumulates from one encounter to the next.

What Papineau calls 'perceptual files' indeed correspond to three distinct types of file in my framework. Papineau denies that they are distinct files, and offers the 'accumulation of information' argument in support of his claim that they are a single file. In response, I concede that, when an object is encountered and some information about it is gained, that information is typically preserved in memory and made available when the object is encountered again and recognized ; new information can then enrich the initial body of information. This gives credibility to Papineau's claim that we are dealing with a single file. Yet the objection does not go through, because it is possible to account for the preservation of information across files within the indexical model.

It is a well-known property of indexical expressions that the content they express so depends upon the context that, if the context changes, the same content cannot be expressed again unless we adjust the indexicals to the new context. As Frege famously said,

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> common realization of such an ability. Tracking a single unmoving object over some lapse of time is another. (Burge 2010 : 198-9)

[4] Despite their stability, recognitional files still fit the indexical model. First, they depend for their very existence upon the existence of a contextual relation to the object, namely the relation of familiarity. Second, the reference of a recognitional file itself depends upon the context: it is that object (if any) multiple exposure to which has created and maintained in the subject the recognitional disposition which underlies the file. Which object that is depends upon the context. (In a different environment, the very same recognitional device in place in the subject would have had the function of detecting another object than what it actually has the function of detecting in the actual environment.)

> If someone wants to say today what he expressed yesterday using the word 'today', he will replace this word with 'yesterday'. Although the thought is the same its verbal expression must be different in order that the change of sense which would otherwise be effected by the differing times of utterance may be cancelled out. (G. Frege, 'Thought', in Beaney 1997 : 132)

Similarly, an adjustment of indexical concepts, which is what I call *conversion*, must take place if the context changes. Conversion is the process through which information stored in a file is transferred into a successor file when the ER relation which sustains the initial file comes to an end.

By appealing to conversion, it is possible, within the indexical model, to do justice to Papineau's obervations regarding the 'namelike' character of perceptual files. Information accumulates despite the distinctness of the files, because *one file inherits the content of another* (a feature which is definitive of conversion). This gives a sense in which demonstrative files, memory demonstratives and recognitional files are 'the same file'. They are stages of the same evolving body of information. At *t* the subject sees the object, and can store information derived from the perceptual episode ; the function of the perceptual buffer (to use John Perry's label for that sort of file) is to store that information. As the episode comes to an end, the subject stays, through memory, in contact with the object, but the relation to the object is different. The subject no longer stands in a perceptual acquaintance relation to the object, but in a distinct, though systematically related, past-acquaintance relation on which the subject's memory is based. Since the relation changes, I said that the perceptual file is replaced by a memory file, but the word 'replacement' hides the continuity between the memory file and the initial perceptual file : in a certain sense, it is the same file — the same body of information — that changes its status as the ER relation on which it is based changes. It is that continuity which the notion of conversion highlights. But this is compatible with the indexical model, according to which demonstrative files, memory files and recognitional files are (in a different sense) distinct files. Files are supposed to fill the mode of presentation role, and there is no doubt that an object is *not* thought of under the same mode of presentation when one sees it for the first time, and when it is a familiar object one immediately recognizes.[5]

[5] This answers the question asked by one referee : 'one might wonder what advantage there is to this fine-grained view of mental files with its accompanying transfers of information, over Papineau's more coarse-grained picture where there is just one file and no transfer. (…) It

I conclude that there are two distinct notions of file. First, there is the file qua evolving body of information putatively about a single object. Following Dean Pettit's suggestion, we may call it the 'pile' (for 'pile of information'). The file proper is more fine-grained. It involves a specific ER relation serving as information channel, in addition to a body of information gathered through that relation or through linking. The body of information, which may evolve within a given file, may also *survive* a change of file. In conversion, as we have just seen, one file succeeds another as the ER relation to the referent changes, but the body of information is preserved. Insofar as the pile is distinct from the file, and can survive a change of file, the persistence of the pile, and the fact that information about the referent accumulates, does not show that the file itself persists. So Papineau's argument does not go through.

3. A more serious objection

It is, I said, mental files in the fine-grained sense (files proper) which play the mode of presentation role. But this can be denied. Indeed, a criterion which Campbell uses to distinguish the cases in which there is a single mode of presentation from the cases in which there are two seems to support Papineau's coarser-grained approach to file individuation.

Mental files are a matter of information clustering. Clustering takes place when all the information derives from the same source, through the same ER relation, or is presumed to do so. The role of the file is precisely to treat all the information as if it concerned one and the same object, from which it derives. As Campbell emphasizes, this gives us a criterion for telling apart the cases in which there is a single file (a single 'sense', in his framework) and the cases in which there are two. If the subject 'trades upon identity' and proceeds to integrate various pieces of information directly, without appealing to a further identity premise, that means that there is a single mode of presentation :

> Consider an inference which depends upon co-reference – for example, the inference from *s is F* and *s' is G* to *there is something which is both F and G*. Here I use different variables *s* and *s'* to emphasize that we have here different *tokens*… We have

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would be helpful to have some explicit statement of the explanatory gains delivered by the fine-grained files.' Here is the statement : *In order to play the mode of presentation role and account for cognitive significance phenomena, files must be fine-grained.* But this fine-grainedness requirement does not prevent us from acknowledging the existence of coarse-grained files *à la* Papineau. As I will argue in section 4, coarse-grained files can themselves be construed as a special sort of fine-grained file, based on composite ER relations.

> to separate two types of case. In the first, we trade directly upon co-reference, moving directly to the conclusion. (…) It seems to me that we can do this just when the two tokens have the same sense. In the second type of case, when the tokens do not have the same sense, it would not be legitimate to move directly to the conclusion. The inference depends upon a suppressed premise which assures us that the tokens *s* and *s'* refer to the same thing. (Campbell 1987 : 275-76)

The following trains of thought provide an example of the distinction Campbell has in mind :

Argument A	*Argument B*
Cicero is bald	Cicero is bald
Tully is well-read	Cicero is well-read
Cicero = Tully	
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Someone is bald and well-read	Someone is bald and well-read

One might think that the only difference between argument A and argument B is that, in argument A, the judgment of identity is explicit, while it remains implicit in argument B (which is therefore enthymematic). The reason why it can remain implicit in B is that the relevant identity ('Cicero = Cicero') is obvious and trivial, so it 'goes without saying' and can be suppressed, in contrast to what happens in argument A. As Campbell and many others have shown, however, this view of argument B as enthymematic and resting on a suppressed premise is indefensible. In general, the attempt to reduce presumptions of identity to implicit identity judgments launches an infinite regress :

> If this view were correct, we would also need to make sure that the uses of ['Cicero'] in the suppressed premise are linked with the uses of ['Cicero'] in the explicit premises, and we would need further suppressed premises to secure these connections. The problem recurs, and we are embarked on a regress. (Campbell 1994 : 75)[6]

[6] See also Fine (2007 : 68): 'According to the [suggestion]… what it is to think that the individual Cicero is a Roman and then to have the coordinated thought that he is an orator is to think the additional thought that the one individual is the same as the other. But if the new thought is to have the desired effect, then it must be supposed that the individuals in the new thought are represented as the same as the respective individuals in the original thoughts ; and

> This means that we cannot regard arguments like the one under consideration as enthymematic, needing but a further (object-language) sentence to be made completely valid ; there is no evading unthinking reliance on sameness of reference. (Sainsbury 2002 : 135)

I conclude that identity presumptions are not (implicit) identity judgments. Identity presumptions and identity judgments are two distinct types of case, as Campbell rightly points out.

In the mental file framework, the two types of case Campbell describes correspond to the case in which the two pieces of information belong to a single file, and the case in which they belong to distinct files but can still be inferentially integrated provided the files in question are linked (by means of an implicit or explicit identity judgment). In the first type of case there is no identity judgement, implicit or explicit, but a mere presupposition of identity resulting from informational clustering. Now, *that may happen even if the relevant pieces of information are gained through distinct sense modalities*. Campbell gives the example of someone looking at a glass and thinking : 'that glass is full', then touching the glass and judging : 'that glass is rigid'. In such circumstances the subject could make the following, cross-modal inference: 'that glass is full ; that glass is rigid ; so there is something that is both full and rigid.' Here the subject trades on the identity of the object seen and the object touched. No appeal is made to an identity premise 'that (seen) glass is that (touched) glass', but the identity is (fallibly) established through the subject's nonconceptual ability to 'track the object from modality to modality' (Campbell 1987 : 283, 288). Such a tracking ability is as fundamental as the ability to track objects through time, Campbell argues : 'The unity and stability of the world is partly constituted by the fact that it is the *same* objects that are perceived at different times or through different sensory modalities' (Campbell 1987 : 290).

In Campbell's example, the relevant cross-modal identities are not additional premises making the subject's reasoning enthymematic : they are presupposed by the subject's cross-

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so the account is circular.' And Schroeter (2008 : 115n) : 'To insist that the subject must make an explicit identity judgment before she can recognize that two thoughts are about the same thing would be to invite a vicious regress—for even the simplest inference from 'P' to 'P' would then require infinitely many explicit identity judgments to establish the co-reference of premise and conclusion. The moral here is much the same as the one Lewis Carroll drew in the case of modus ponens: we must have some basic way of taking two thoughts to be co-referential which does not require an explicit identity judgment.'

modal clustering of information, which itself rests upon the subject's nonconceptual abilility to track the object from modality to modality.[7] Campbell concludes that 'ways of thinking of objects are intrinsically coarse-grained with respect to the underlying perceptual information' (*id.*). Now Papineau could argue, along the same lines and on the basis of the same criterion, that the indexical model cuts modes of presentation too finely when it comes to cross-*temporal* inferences.

Let us consider the phenomenon of recognition. According to the indexical model, it works as follows. The subject's initial perception of the object at *t* has left a memory file (resulting from conversion of the initial perceptual file), and that memory file gets 'linked' to the demonstrative file corresponding to the subject's current perception of the object at *t'*. Linking is the operation on files which enables information from one file to flow freely into the other ; it corresponds to a judgment of identity. In the case at hand, therefore, the subject implicitly judges : this object (which I see) = that object (which I saw). Or at least, that is what the indexical model predicts. Is that prediction correct ? Arguably not. There are indeed cases in which the subject, at *t'*, entertains two distinct files, a demonstrative file corresponding to some object he sees at *t'*, and a memory demonstrative corresponding to some object he saw at *t*. Then, realizing that the 'two' objects are the same, the subject links the two files through a judgment of recognition.[8] But recognition need not take this form. It can be more immediate : the file in memory can be *directly activated* by the current perceptual encounter. That, I think, is the sort of case Papineau has in mind when he talks of 're-activation' of the perceptual file. Indeed he insists that recognition involves a *single* file which is stored in memory between *t* and *t'* and re-activated at *t'*.

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[7] What if the object seen is not actually the same as the object touched ? According to a referee for this journal, that type of situation raises a dilemma : 'does this mean that there is one file with two objects of reference…? Or that there are two files and that I am mistakenly operating on the assumption that there is one? If the latter, in what sense can files be said to play the role of 'modes of presentation', of capturing the subject's point of view?' But there is a third option : there is a single file, playing the mode of presentation role, but that file rests on a false presupposition of identity, so it *fails to refer* (rather than referring to two objects simultaneously, as per the first horn of the dilemma).

[8] See for example Perry (2002 : 195-96) : 'I see my friend Al limping toward me but cannot yet recognize him ; I form a notion of this person. At that moment I have two unlinked notions of Al. Certain of my beliefs about Al I have twice over, such as that he is a man. Others I have in one file but not in the other, such as that he has a limp. I accumulate information about him as he gets nearer ; finally I recognize him as Al. At that point the notions become linked ; the newly acquired perceptual information combines with the old information, and I say *Why are you limping, Al ?*'

If we appeal to the Campbell criterion here, it clearly supports Papineau's position, and seems to tell against the indexical model.[9] Suppose the memory file deriving from the initial encounter with the object contains the information 'was F'. And suppose that, on the new encounter with the object, one sees that it is G. In a case of immediate recognition, the subject will trade upon the identity of the seen object and the remembered object and will judge : 'That thing, which was F, is G' (or through existential generalization: 'something that was F is G'). This is exactly parallel to the cross-modal case and should lead us to conclude, with Papineau, that modes of presentation are intrinsically coarse-grained in the temporal dimension : since the information stored in memory and the perceptual information derived from the current encounter with an object one recognizes are immediately integrated, they should be construed as part of a single file, rather than distributed into two distinct files, as per the indexical model.[10]

4. Incremental conversion

To deal with this objection, we must concede that, in immediate recognition, the subject does *not* think of the object he perceives under a demonstrative mode of presentation distinct from the memory file but, from the start, under a mode of presentation which somehow *incorporates* the memory file. That, however, does not mean that we have to give up the indexical model with its fine-grained individuation of files in terms of ER relations. What we should do, rather, is introduce *more* ER relations, and more types of file based on them. In particular, we should introduce *composite* ER relations.

In the case at hand, I suggest that the mode of presentation of the object one immediately recognizes is based on the following relation :

$\lambda x \lambda y$ (x has been acquainted with y in the past and is currently standing in the demonstrative relation to y once again)

I call that composite ER relation *the re-acquaintance relation*. It puts a well-functioning subject in a position to recognize the object and to cluster information derived from multiple

[9] Prosser (2005 : 373ff) uses the Campbell criterion to argue for a coarse-grained ('dynamic') individuation of modes of presentation.

[10] Additional support for this claim can be derived from Evans's remarks on 'dynamic Fregean thoughts' (Evans 1982 : 292-96, 1985 : 309-11).

sources : memory *and* perception. A file based on that relation is a third type of demonstrative file, in addition to standard demonstratives and memory demonstratives. I call it a *recognitional demonstrative*. A recognitional demonstrative is a variety of demonstrative file ; it is not a recognitional file based on the familiarity relation. (It is less stable than a recognitional file because it requires a perceptual link to the referent, while a recognitional file only requires a recognitional disposition which transcends particular episodes.)

The re-acquaintance relation results from *compounding* the relations which underwrite memory files and demonstrative files. Memory files are based on the relation of having been acquainted with the referent in the past (or having stood in the demonstrative relation to it), while standard demonstrative files are based on the demonstrative relation. Positing yet another relation which results from compounding these two enables us to draw a distinction between the cases in which the subject has two distinct modes of presentation for the same object (one based on the demonstrative relation, and the other based on the past-acquaintance relation) and the cases of immediate recognition in which the subject thinks of the object he (re-)encounters under a rich mode of presentation based on multiple relations to the object (Figure 3). Only in the first type of case does linking take place. In immediate recognition, there is no linking of files, as there is a single file (based on a composite relation). To be sure, it is *presupposed* that the object to which the subject stands in the demonstrative relation is the same object he has been acquainted with before and remembers ; but the subject does not *judge* that the identity holds. Rather, the identity is established, at the sub-personal level, through the subject's nonconceptual capacity to recognize the object and track it over time.

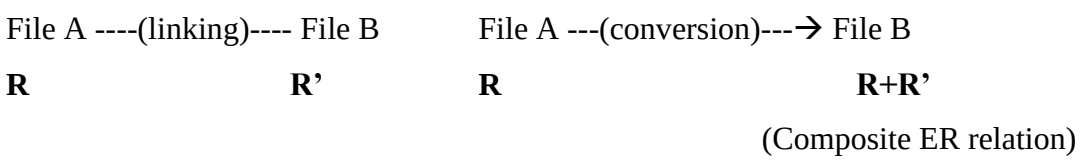

Figure 3 : linking vs incremental conversion

To sum up, in a case of immediate recognition of an object one has perceived in the past, the memory file which results from the conversion of the initial demonstrative file (corresponding to the first perceptual encounter) is itself converted, through perceptual re-activation, into a file which rests on *multiple* information channels : the file hosts information gained in virtue of the subject's memory of the initial encounter *as well as* information gained in virtue of the current perceptual episode. The subject's relation to the object has changed :

from a pure memory relation it has evolved into a composite memory-perception relation. This is an instance of *incremental conversion* : the successor relation consists of the predecessor relation R (here, the relation of having been acquainted with the object in the past) plus some extra relation R' (the current demonstrative relation). Through incremental conversion, the file grows an extra information link.

On this view, one maintains the fine-grained distinction between types of file based on distinct types of ER relation (e.g. the demonstrative relation, the past-acquaintance relation, the re-acquaintance relation, the familiarity relation). These files get united through the mechanism of conversion, which makes preservation of information possible. Thus the initial demonstrative file is converted into a memory demonstrative, and the memory demonstrative itself is converted into a recognitional demonstrative when the object is re-encountered. So the indexical model is upheld. Still, one accounts for the crucial feature of immediate recognition, namely the fact that the identity of the seen object and the remembered object is established through the subject's nonconceptual capacity to recognize the object. That capacity can operate because the subject stands in the re-acquaintance relation to the object. On that relation a special sort of mental file is based, which enables the subject to store information derived from multiple sources : memory, and current perception. That there is a single mode of presentation (based on the composite relation of re-acquaintance) rather than two is what distinguishes immediate from 'slow' recognition.[11] In slow recognition the subject judges that the seen object is the remembered object : there are two modes of presentation which are linked, while in immediate recognition cases there is a single mode of presentation based on a composite relation. Identity is presupposed in the latter sort of case, without being conceptually articulated in the form of an identity judgement.[12]

5. Conclusion

[11] On the distinction between the two types of recognition, see Wright (2012 : §§7- 8).
[12] The distinction arguably sheds light on alleged counterexamples to the claim that self-ascriptions of bodily properties directly based upon a first-person experience should be immune to error through misidentification (Recanati 2012). In the so-called 'rubber hand illusion', one wrongly identifies the hand one sees as one's own, yet the self-ascription of ownership is directly based on a first-person experience. Here, I would say, the faulty 'identification' is built into the composite ER relation at stake, so it is not an error through misidentification in the usual sense, that is, one that involves a mistaken judgment of identity.

In this paper, I considered Papineau's objection that the indexical model cuts perceptual modes of presentation too finely. As both Campbell and Papineau point out, the coarse-grainedness of perceptual concepts follows from their cross-modal and cross-temporal nature. I agree, but, in response to the objection, I have shown that these features can be accommodated within the indexical model. In my framework, modes of presentation (mental files) *are* fine-grained, but that does not prevent them from displaying the required coarse-grainedness — on the contrary. The fine-grainedness of files enables them to be *abundant* — as abundant as the ER relations on which they are based — and their abundance is what makes coarse-grained files available. Such files, I argued, are files based on *composite* ER relations, and composite ER relations are just another type of ER relation. If I am right, the indexical model gives us both the fine-grainedness needed for modes of presentation to play their standard role (accounting for cognitive significance and coreference *de jure*) and, as a by-product, the coarse-grainedness needed to capture the cross-modal and dynamic nature of perceptual modes of presentation.[13]

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