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# Visual Memory and the Bounds of Authenticity

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It has long been known that memory need not be a literal reproduction of the past but may be a constructive process. To say that memory is a constructive process is to say that the encoded content may differ from the retrieved content. At the same time, memory is bound by the authenticity constraint which states that the memory content must be true to the subject's original perception of reality. This paper addresses the question of how the constructive nature of visual memory can be reconciled with the authenticity constraint. In what respect and to what extent may the content of a visual memory differ from the original perceptual state while still adequately reflecting the subject's original perception?

Section 1 gives an overview of taxonomies of memories and defines visual memory. Section 2 sets forth two theories of mental imagery – pictorialism and descriptivism. Section 3 distinguishes two aspects of the veridicality constraint on memory: authenticity and truth. The truth of a memory has to do with the memory content correctly representing objective reality. Authenticity is an internal criterion concerning the accuracy of the reproduction of a past representation (true or false). Sections 4 and 5 sketch two separate accounts of memorial authenticity for each side of the imagery debate.

## 1 Visual Memory

Everyone agrees that there are different kinds of memory but there is no generally agreed-upon classification of kinds of memory. Psychologists and cognitive scientists distinguish between kinds of memories according to at least four criteria: the length of time the information is stored, the degree of awareness the subject has of the stored information, the kind of prompt that triggers the retrieval of the information, and the kind of information that is stored. When memories are divided up in terms of the length of time the information is stored, we get the distinction between short-term memory, working memory, and long-

term memory. Memories can also be distinguished by the degree of awareness the subject has of the stored information: there are unconscious, dispositional, partially conscious, and conscious memories. When attention is paid to the kind of prompt that triggers the retrieval of the information stored in memory, it makes sense to distinguish between free recall, cued or prompted recall, and recognition. Finally psychologists and cognitive scientists distinguish between declarative and procedural memory. Declarative memories are ones the subject can express. Procedural memories the subject can only demonstrate but not express.

Given the striking differences between declarative and procedural memories some have wondered whether memory is a natural kind, as generally assumed, or whether it is instead of a set of disparate phenomena that are only superficially similar to each other (see Michaelian 2010). The worry is that the declarative memory system is simply too different from the procedural memory system, both in terms of the computational level and the implementational level, for memory to be a natural kind. Declarative memory, unlike procedural memory, is concerned with propositional knowledge and is controlled by the hippocampus. There doesn't seem to be a natural computational-level description adequate to both declarative and procedural memory.

It goes beyond the scope of this paper to try to settle the question of whether memory is a natural kind but I would like to make two comments. First, skepticism about status of memory as a natural kind seems to rely on the contentious assumption that kinds of memories can be distinguished only by means of the underlying computational process. Yet there are no other criteria for distinguishing kinds of memory, criteria such as phenomenological features of remembering, semantic features of memory reports, and epistemic features of memories. Second, even if memory is not a single natural kind declarative memory and procedural memory can each qualify as natural kinds.

Following a suggestion by Tulving (1972), psychologists and cognitive scientists distinguish between two types of declarative memory – *semantic* and *episodic memory*. Episodic memory represents our experiences and specific events in time in a serial form, from which we can reconstruct the actual events that took place at any given point in our lives. Since episodic memory is accompanied by the experience of remembering, or mentally traveling back in time and re-experiencing the events it is also called *autobiographical memory*. Individuals tend to see themselves as actors in these events, and the emotional charge and the entire context surrounding an event is usually part of the memory, not just the bare facts of the event itself. Semantic memory, on the other hand, is a record of facts, meanings, concepts and knowledge about the external world that we have acquired. It refers to general factual knowledge,

shared with others and independent of personal experience and of the spatial/temporal context in which it was acquired. The characteristic feature of semantic memory is that it can be used without reference to the events that account for its formation in the first place. So whereas semantic memory involves retrieval of the information acquired during a given learning episode, episodic memory involves, in addition, remembering something about the specific learning episode itself, namely the context in which the information was acquired.

The philosopher's counterpart to the semantic/episodic distinction is the distinction between *propositional* and *experiential memory*. Experiential memory has two characteristics. First, one can experientially remember only what one has personally experienced. Experiential memory is restricted to cases in which the claim to remember something incorporates the claim to have experienced it for oneself. Second, experiential memory represents the remembered content from the first-person perspective – from 'within' – and involves qualitative experiences (qualia) and imagery. Experiential memory consists in the evocation of parts of the original experience in imagination, allowing one to relive or re-experience the original situation and going over what it was like. Like imagination and fantasy, experiential memory is an iconic state – roughly one that can be conceived as a sort of theatrical presentation to oneself. Instances of propositional memory have the form 'remembers that p,' where 'p' stands for a true proposition. Unlike experiential memory, propositional memory is not limited to things with which one has had direct or personal acquaintance. One need not have witnessed something to remember it. Consequently propositional memory doesn't require qualitative experiences and imagery.

The psychological distinction between semantic and episodic memory is similar, but not identical, to the philosophical distinction between propositional and experiential memory. What distinguishes experiential from propositional memory is that the former, but not the latter, is limited to items with which one has had direct acquaintance. The distinction between semantic and episodic memory, however, does not turn on the direct acquaintance with the remembered thing but on how much one remembers about the context when the event in the past was witnessed.

In this paper I want to focus on another distinction similar to the semantic/episodic and propositional/experiential distinctions but not identical to them: the distinction between *verbal memory* and *visual memory*. When you remember an object you can either remember the actual way it looked like a photograph, video or experience machine (visual memory) or you can remember a description of how you took the object to look, like a journal entry (verbal memory). Visual memory more or less reproduces the perception of the object

while verbal memory uses words, concepts and propositions to refer to the object perceived in the past.

Visual memory is an imagistic representation of a previously perceived scene that retains many of the topographical and metric properties of the original perceptual state. A visual memory is similar to the original perceptual state, but it is generated by the mind. The original perceptual state need not be the product of the visual system. We can have visual memories of past dreams and hallucinations. The defining feature of visual memory, the way I use the term, is that both the input and the output of the memory system is imagistic and that the output retains certain qualitative features of the input (see Hollingworth and Luck 2008).

The visual/verbal memory distinction is analogous to the distinction between knowledge by acquaintance and knowledge by description. All experiential memories qualify as visual memories but not vice versa. The reason is that experiential memories have to be autobiographical but visual memories need not refer to events the person has experienced herself. I may visually remember a scene I didn't witness first-hand but that was described to me by someone else. Similarly, all propositional memories qualify as verbal memories but not vice versa. The reason is that verbal memories need not be substitutes of the schema 'S remembers that p,' where 'p' stands for a true proposition.

The lion's share of work done in the philosophy of memory is on verbal memory. This is understandable. Words, concepts and propositions are popular among philosophers because they represent meaning in a uniform notation, without specific details used to express the meaning. But stripping away these details can also have advantages. Typically the verbal representation of an experience omits more information than its imagistic counterpart. Given the prevalence of visual memory and given the fact that visual memory has been treated step motherly, it is high time to give it some careful thought.

## 2 The Imagery Debate

While no one disputes that much of our thinking and remembering involves what seem to be images there is considerable disagreement among philosophers and cognitive scientists about the representational format of visual mental imagery. The question is whether the internal representations of imagery represent in the manner of (physical) pictures or in the manner of language. On one side of the debate are proponents of *pictorialism* (like Stephen Kosslyn and Jerry Fodor) who hold that the mental representations we experience as imagery are

like pictures with intrinsically spatial representational properties of the sort that pictures have. Mental images are quasi-pictures-in-the-head which persons can construct, manipulate, and view. On the other side of the debate are proponents of *descriptivism* (like Zenon Pylyshyn and Daniel Dennett) who hold that the mental representations that we experience as imagery are more like linguistic descriptions of visual scenes. Given descriptivism, mental images represent in the manner of language. The dispute between pictorialism and descriptivism, known as the *imagery debate*, has generated considerable controversy and discussion in the last thirty years.

The two main arguments for pictorialism concern (i) the rotation of imagistic representations, and (ii) the mental scanning of images. The main arguments for descriptivism concern (iii) cognitive penetrability, and (iv) image indeterminacy. I will briefly explain these arguments in turn.

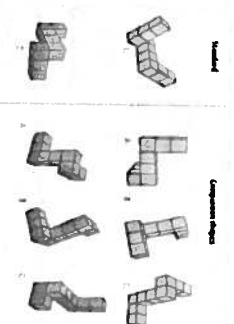


Fig. 1

(i) *Rotation Data.* In a famous experiment by Shepard and Metzler (1971) subjects were asked to determine whether two pictures of three-dimensional objects at different orientations represent the same object (see Figure 1).

The experiment suggests that a subject's reaction time is directly proportional to the amount of time it would take to rotate the object at the orientation in the first picture to the orientation of the second picture. Other experiments on mental rotation (e.g., Cooper 1975) suggest that the time taken to respond increases linearly with the angular distance between the objects, that is, with the degree through which one object would have to be rotated to bring it into congruence with the other.

Rotation experiments have been taken to imply that mental images are pictorial: greater angular disparity between the two three-dimensional objects the subject is asked to compare correspond to greater reaction times because subjects are carrying out the relevant rotations on their mental images to complete the experimental tasks, and greater angular disparities require a larger number of incremental transformations to affect the desired change.



Fig. 2

(ii) *Scanning Data.* Kosslyn (1980) asked subjects to memorize the map in figure 2 shift focus between parts of a mental image of that map. After focusing their attention on a part of the image, subjects waited for a probe word, and then scanned their images to see if the object named by the probe word was located on the map. The experiment suggests that the time subjects take to shift their focus from one location to another in their mental images is directly proportional to the distance between those two points on the visually presented map.

Kosslyn and others have performed a number of different scanning experiments. These experiments suggest four results: first, more time is required to scan long distances than short distances, even if the number of parts between the focus and target locations is equal. Second, subjectively large images take longer to scan than subjectively small images. Third, these distance effects persist even when subjects focus their attention on a small portion of the image. Finally, when subjects do not use images to solve the experimental task, even if they have first generated images and focused on them, the time differences disappear. These results are taken to indicate that mental images have portions which correspond to portions of the objects they represent, and that the spatial relations between these portions of images correspond linearly with the spatial relations between portions of the objects represented (Cohen 1996: 153).

Scanning and rotation experiments have been taken to suggest that processes which operate over mental images are functionally and computationally equivalent to analogous processes performed over visual perceptions. The reason is that the medium of representation for mental imagery is close to, or perhaps even parasitic on, that of visual perception. The underlying argument has the form of an inference to the best explanation: if it rotates like a depictive representation, scans like a depictive representation, interferes with other visual processes like a depictive representation, has a subjective size like a depictive

representation, and has a visual angle like a depictive representation, then a mental image is a depictive representation. Hence pictorialism is true.

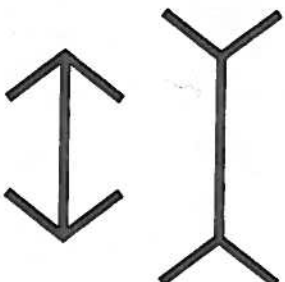


Fig. 3

(iii) *Cognitive Penetrability:* One of the arguments for descriptivism concerns cognitive penetrability. Cognitive processes are cognitively penetrable if their workings can be affected by the beliefs of the person, and impenetrable if they cannot be. The visual system is supposed (by most) to be cognitively impenetrable: the information processed by the visual system is not affected by information in higher-level cognitive systems. For example, although one may know that the lines in the Müller-Lyer illusion (see figure 3) are of the same length, one cannot see them as being the same length. If mental imagery were like perception, we would expect that it is impenetrable as well. But mental imagery is penetrable, or so descriptivists claim.

Experiments by Pylyshyn (1981) suggest that extra-visual beliefs can influence the course of imagery processes. For example, when four-year-old children are shown an inclined beaker filled with colored fluid and then asked to draw what they have seen, they usually draw the top of the fluid perpendicular to the sides of the beaker. Pylyshyn claims that this fact is explicable on the descriptivist view: the propositional representation children use to represent what they have seen is not subject to the principle of fluid invariance, of which the children are ignorant, and consequently they draw a picture from a propositional description according to which the top of the fluid is perpendicular to the sides of the beaker. As a result, four-year-olds produce inaccurate drawings.

(iv) *Image Indeterminacy:* A prominent philosophical argument for descriptivism concerns the indeterminacy of images. The idea is that mental images, but not physical pictures, can be indeterminate and therefore the two cannot be identified. The indeterminacy of mental images speaks in favor of

descriptonalism since descriptions can be vague in the same way mental images can and that pictures cannot. Here is the *locus classicus* of the argument:

Consider the Tiger and his Stripes. I can dream, imagine or see a striped tiger, but must the tiger I experience have a particular number of stripes? If seeing or imagining is having a mental image, then the image of the tiger must – obeying the rules of images in general – reveal a definite number of stripes showing, and one should be able to pin this down with such questions as ‘more than ten?’, ‘less than twenty?’. If, however, seeing or imagining has a descriptonal character, the questions need have no finite answer. Unlike a snapshot of a tiger, a description of a tiger need not go into the number of stripes at all; ‘numerous stripes’ may be all the description says. Of course in the case of actually seeing a tiger, it will often be possible to corner the tiger and count his stripes, but then one is counting *real* tiger stripes, not stripes on a mental image (Dennett 1969: 136–7).

There are a number of responses to this argument. First of all, it is not clear that mental images are in fact indeterminate or inexplicit in the relevant sort of way. The reason one may not be able to count the stripes on one’s tiger image may have to do with the tendency of images to fade from consciousness quickly. In other words, mental images can seem to be indeterminate even though they in fact have a determinate content. Furthermore, it is questionable that a picture of a tiger must be determinate with respect to the number of stripes. Blurred pictures and impressionistic sketches, for instance, exhibit the indeterminacy Dennett claims pictures cannot have. But if pictures can be indeterminate, then there doesn’t seem to be relevant difference between pictures and mental images (see Fodor 1975: 189; Tye 1991: 107). To this objection a proponent of descriptonalism might respond:

What I mean to say is that barring problems of individuation of picture-stripes, such as when they blur or merge at some places, a picture that represents something as striped must have a determinate number of picture-stripes. The indeterminacy of number of stripes on a mental image of a striped tiger has nothing to do with blurring or merging or any other individuation problem. Rather it is a matter of the image representing stripedness more like the way the sentence ‘The tiger was striped’ does than like a picture.<sup>1</sup>

The revised version of the image-indeterminacy argument is still problematic. Contrary to Dennett’s contention, pictorial representations can be indeterminate in much the same way as verbal descriptions. Consider, for instance, the picture of a stick figure; it explicitly leaves open the weight, height, and posture of the depicted person. Now a critic might object that a stick-figure picture is different

from a striped-tiger picture in that a picture that represents a tiger as striped must itself have a determinate number of picture stripes. But even if this is so, there doesn’t seem to be anything in the nature of pictures that requires that makes it impossible for their content to be explicitly indeterminate or non-committal. Hence, the alleged difference between pictures, on the one side, and verbal descriptions, on the other, doesn’t hold up to scrutiny.<sup>2</sup>

Apart from the two antipodal views – descriptonalism and pictorialism – there are a number of compromise views. One such compromise is the dual-coding view which says that we can use either a verbal and/or non-verbal system (Paivio 1971). The imagery system is associated with right hemisphere processing, and the verbal system mainly takes place in the left hemisphere. These two systems integrate information together to represent an image. Another compromise view has is that a spatial, iconic medium such as a grid is filled with symbolic propositional vectors that specify the property represented at each position in a grid (Tye 1991).

### 3 Memorial Authenticity

The content of a memory state must accord with objective reality. For instance, I can only remember that I had eggs for breakfast if I did have eggs for breakfast. If I didn’t have eggs for breakfast, it may seem to me that I remember that I had scrambled eggs for breakfast but I cannot remember that I did. Non-propositional and non-verbal memories are also *factive*. For instance, I can only remember the way the breakfast plate looked if the memory image accurately represents the visual scene. It is the fact that memory implies truth that sets it apart from imagination and confabulation.

Memories must not only accord with objective reality but also reflect the subject’s initial perception of reality (true or false). Memories have a *mind-in-the-present-to-world-in-the-past* direction of fit as well as a *mind-in-the-present-to-mind-in-the-past* direction of fit. For a representational state to qualify as a memory it must be, among other things, an authentic rendering of a past representation. *Authenticity*, the way I use the term, is an internal criterion concerning the accuracy of the reproduction of a past mental state, true or false (see Bernecker 2010: 36–9, 214–7). Authenticity refers to the accuracy of the present rendition of a past representation. The rendition of the past representation may

<sup>1</sup> Block 1983: 654. Block does not subscribe to this argument.

<sup>2</sup> For a defense of the image indeterminacy argument for descriptonalism see Simpson 1985.

be of a verbal, propositional or imagistic kind. On my view, memory must be true and authentic. Just as a faithful rendering of a false representation doesn't qualify as memory, neither does the distorted rendering of a veridical representation.

What are the conditions on the authentic rendering of a past representation? According to some, the mark of memorial authenticity is content identity: for a present representation to be memory-related to a past representation the contents of both representational states must be type-identical. This view, I call it the *identity theory of memory*, has been the standard view for centuries. For instance, in the *Theaetetus* Plato compares memory to a block of wax in which the perceptions are imprinted in the same way "as we might stamp the impression of a seal ring. Whatever is rubbed out or has not succeeded in leaving an impression we have forgotten and so do not know" (192i: 191c8-e). The wax tablet metaphor is taken up in Aristotle's *De Memoria* (450a 28-32):

It is clear that one must think of the affection which is produced by means of perception in the soul and in that part of the body which contains the soul, as being like a sort of picture, the having of which we say is memory. For the change that occurs marks in a sort of imprint, as it were, of the sense-image, as people do who seal things with signet rings.<sup>3</sup>

The identity theory of memory can also be found in Hume's *Treatise of Human Nature*. Hume (2000: 12) maintains that memory is about the re-experiencing of mental images that are copies of the original experience. He goes so far as to say that "memory preserves the original form, in which its objects were presented, and that wherever we depart from it in recollecting anything, it proceeds from some defect or imperfection in that faculty." The conception of memory as a purely passive process of information storage is still very much with us today. It is a tacit assumption behind virtually all computer metaphors of human memory.

The identity theory of memory is at odds with what science tells us about the workings of memory.<sup>4</sup> Neurobiologists have discovered that long-term memories are not etched in a wax-tablet-like stable form. Instead, long-term

memories are sustained by a miniature molecular machine that must run constantly to maintain the memories (see Shema, Sacktor, and Dudai 2007). Moreover, cognitive psychology has disproved the identity theory by showing that memory is not only a passive device for reproducing contents but also an active device for processing stored contents. The psychologist Susan Engel (1999: 6) explains:

Research has now shown that ... retrieval is almost always more a process of construction than one of simple retrieval. One creates the memory at the moment one needs it, rather than merely pulling out an intact item, image, or story. This suggests that each time we say or imagine something from our past we are putting it together from bits and pieces that may have, until now, been stored separately. Herein lies the reason why it is the rule rather than the exception for people to change, add, and delete things from a remembered event.

To be sure, there is a difference between saying, as I do, that memory need not amount to the exact reproduction of some previously recorded content and saying, as Engel does, that, as a matter of principle, memory constructs rather than reproduces previously recorded contents. Engel and fellow proponents of memorial constructivism (such as Craig R. Barclay, William F. Brewer, and Ulric Neisser) seem to lose sight of the factivity and authenticity constraints on memory. By overemphasizing the reconstructive nature of memory the distinction between memory and confabulation becomes blurred. Yet constructivists are right to maintain that the fact that our memory not only stores but also processes the incoming information should not be regarded as an abnormal lapse of an otherwise reliable cognitive faculty, but instead as part of the very function of memory. As a result of such information processing, the content of a memory state may differ, to some degree, from the content of the original representation.

Given that remembering doesn't require the exact duplication of past representations, what is the permissible range of aberration between a past representation and the memory thereof? What is the margin of error regarding content reproduction? What are the bounds of authenticity with respect to remembering? In (2010: 222-9) I set forth an account of memorial authenticity for propositional memory. The goal of this paper is to deal with memorial authenticity for visual memory.

As we saw in the previous section, there is considerable disagreement among philosophers and cognitive scientists about the representational format of visual mental imagery. Depending on which side of the imagery debate one takes has profound consequences for how one thinks about memorial authenticity. If visual memories are quasi-pictures-in-the-head, as pictorialists claim,

<sup>3</sup> I do not mean to suggest that Plato and Aristotle endorsed the identity theory of memory. The wax tablet metaphor is propounded to clarify the relationship between perceiving and knowing without implying that this is all that is involved in memorizing and recall. Nevertheless, the metaphor does illustrate the dangers of being captured by the attraction of a picture. Most classical and medieval writers seem to have been satisfied with the wax tablet as a metaphor for memory.

<sup>4</sup> For Wittgenstein's critique of the identity theory of memory see Wittgenstein 1980, vol. 1, §220 and §131 and Wittgenstein 1982: §442. See also Moyal-Sharrock (2009).



the issue of memorial authenticity comes down to determining when is a present picture-in-the-head sufficiently similar to a past picture-in-the-head for the former to be memory related to the latter? If, however, visual memories are linguistic descriptions of visual scenes, as descriptionists maintain, then the measure of memorial authenticity is verbal or propositional as opposed to depictive.

Rather than, first, picking a side in the imagery debate and then constructing an account of memorial authenticity that goes with it, I attempt to sketch two separate accounts of memorial authenticity for each side of the imagery debate. In section IV I sketch an account of memorial authenticity for descriptionism and in section V I propose an account of memorial authenticity for pictorialism.

## 4 Descriptivism and Memorial Authenticity

In what respect and to what extent may the content of a present state of mental imagery differ from a past visual representation (from which it causally derives) and the mental imagery still stand in a memory-relation to the past visual representation? Given descriptivism, what we experience as mental imagery is in fact a linguistic description of a visual scene. On this view, the above question is tantamount to the following one: in what respect and to what extent may the descriptive content of a present state of mental imagery differ from the descriptive content of a past representation for the former to still stand in a memory-relation to the latter?

With respect to propositional memory I have argued for *content abstractionism*, that is, the view that the content of a propositional attitude retrieved from non-inferential memory may be informationally impoverished vis-à-vis the content of the propositional attitude fed into the memory system (Bernecker 2010: 222–9). Non-inferential memory allows for the decrease but not for the increase or enrichment of information. On my form of content abstractionism, called the *entailment thesis*, the decrease of information caused by non-inferential memory is such that the retrieved content is a relevant entailment of the encoded content.

To illustrate the entailment thesis consider an example. Suppose on Monday morning you have scrambled eggs for breakfast. On Tuesday all you can remember is that you had eggs for breakfast; you have forgotten how the eggs were prepared. Notwithstanding the fact that *I had eggs for breakfast* and *I had scrambled eggs for breakfast* are different propositions, it is natural to suppose

that the former belief is memory-related to the latter one – provided, of course, the other memory conditions (namely the causal condition, the truth condition, and the representation conditions) are met. The reason the discrepancy between the two content tokens doesn't and shouldn't prevent us from granting propositional memory is that the proposition *I had eggs for breakfast* is entailed by the proposition *I had scrambled eggs for breakfast*.

Analyzing the notion of content similarity in terms of the entailment relation is perfectly compatible with the factivity constraint on memory. The entailment relation preserves truth. If *q* is entailed by *p*, and if *p* is true, so is *q*. Thus if *I had scrambled eggs for breakfast* is true, so is *I had eggs for breakfast*. Provided that the contents fed into the memory process are veridical and that there are no external circumstances changing the truth values of the contents while they are in storage, the entailment thesis ensures that the retrieved contents are veridical as well. And since each proposition entails itself the entailment thesis also allows for cases where the faculty of memory works like a photocopy producing duplicates of past propositional attitudes.

Anything follows from a false antecedent and any conditional with a true consequent is true. What is unsettling about these paradoxes of material implication is that in each of them the antecedent is thematically irrelevant to the consequent. The reason I analyze memorial authenticity in terms of *relevant* entailment is so as to rule out some far-fetched entailments of one's past thoughts as instances of memory. The notion of relevant entailment ensures that the content of the present propositional attitude is not on a completely different topic than the content of the past propositional attitude.

While non-inferential memory allows only for the decrease of information, inferential memory also allows for the increase or enrichment of information. Consider the following example. On Monday morning you have scrambled eggs for breakfast. On Tuesday you remember that the breakfast you had the previous day was not vegan. *I have scrambled eggs for breakfast* relevantly entails that *my breakfast wasn't vegan*. The belief that my breakfast wasn't vegan does not qualify as a *non-inferential* memory of the belief that I have scrambled eggs for breakfast but it can meet the conditions for *inferential* memory, provided I have a background belief about veganism. Inferential memory allows for tautological entailments such as these:<sup>5</sup>

<sup>5</sup> The value of the index in the subscript to 'r' determines whether the time referred to is in the past or the present: the relatively biggest number indicates the present. So here 'g' is the present and 'r' is the past.

$t_i: (p \rightarrow q) \wedge p$	$t_i: q$	modus ponens
$t_i: (p \rightarrow q) \wedge \sim q$	$t_i: \sim p$	modus tollens
$t_i: (p \vee q) \wedge \sim p$	$t_i: q$	disjunctive syllogism
$t_i: (p \rightarrow q) \wedge (q \rightarrow r)$	$t_i: p \rightarrow r$	hypothetical syllogism
$t_i: p \wedge q$	$t_i: p$	conjunction elimination
$t_i: p$	$t_i: p \vee q$	disjunction introduction
$t_i: \text{Phosphorus}$	$t_i: \text{Hesperus}$	substitution <i>de re</i>

If mental images are linguistic descriptions of visual scenes, as descriptonalism claims, the entailment thesis which was developed for propositional memory carries over to visual memory. Just as propositions can entail one another so can sentences. The idea is that two diachronic mental images are sufficiently similar to stand in a memory-relation to one another if the descriptive content of the later image is relevantly entailed by the descriptive content of the earlier image. In the case of non-inferential visual memory, the descriptive content of the later image may not be richer than that of the earlier image. In the case of inferential visual memory, the descriptive content of the later image may be richer than that of the earlier image, provided the descriptive content of the later image is relevantly entailed by the descriptive content of the earlier image. The phenomenon of boundary extension, in which a subject remembers having seen more of a scene than they saw in fact, is an example of inferential visual memory. Boundary extension comes about when information about the likely layout of the scene is retrieved from other memories and incorporated into the memory of the given scene (Koriat et al. 2000: 495; Schacter et al. 1998: 305).

## 5 Pictorialism and Memorial Authenticity

According to abstractionism, the content of non-inferential visual memory may be informationally impoverished vis-à-vis the content of the visual representation fed into the memory process. Non-inferential memory allows for the decrease but not for the increase or enrichment of information. If the contents of visual memories are propositional in form, as descriptonalism claims, the rule underlying the process of memorial abstraction is that of relevant entailment. But what is the rule of memorial abstraction, if the content of visual memories is imagistic or depictive rather than propositional? Since imagistic representations don't stand in entailment relations to one another pictorialism calls for a novel account of memorial authenticity. The goal of this section is to give a rough sketch of such an account.

Consider the following case. On Monday you meet a friend for coffee. On Tuesday you vividly remember your friend sitting across from you sipping her coffee, but you have forgotten the color of your friend's pullover. The memory image you are having is non-committal regarding the color of your friend's pullover. The pullover in your mental image is like the proverbial white spot on a map. Cases like this one are quite common (cf. section 2). Our memory frequently presents us with mental images that are indeterminate with respect to particular features. Intuitively, mental images whose contents are in part indeterminate can still count as genuine memories. One doesn't have to recall everything about a particular scene to qualify as visually remembering the scene. One can remember more or less about the scene. It seems then that non-inferential visual memory allows for the omission of content. The omission of content can take different forms. One way for content to be omitted in the process of remembering is that the memory image is in part indeterminate. The above example about the color of your friend's pullover is a case in point. Another way for content to be lost in the process of remembering is that the mental image retrieved from memory is a cropped version of a previously perceived scene. You may, for instance, visually remember your friend sipping her coffee but not remember the scenery around her – the color of the wall, the people at the adjacent table, the decor of the room, etc.

In the case of non-inferential visual memory, the informational content of the memory image cannot exceed that of the original visual representation. Inferential visual memory, however, does allow for some increase or enrichment of informational content. I am inclined to think that there is no general criterion to sort between those processes of informational growth that do qualify as inferential visual memory and those that don't. How much and what kind of informational growth inferential visual memory allows for has to be decided on a case by case basis. Let's take a look at three processes of content generation that seem to be compatible with the authenticity constraint governing visual memory: the substitution of generic elements for particular ones, the change of perceptual aspects, and the change of memory perspective.

*Generic elements.* Consider, once again, the visual memory of your friend sitting across from you sipping coffee. Since you have forgotten the color and style of the pullover your friend wore you picture her wearing the kind of pullover that she tends to wear. You represent your friend as wearing a generic pullover instead of the particular one you cannot recall.

Should memory images that contain generic elements count as genuine memories? The answer depends on how one thinks of generic elements in mental images. If the image of a generic pullover were fully determined, then it would be possible that the generic-pullover image doesn't accord with the im-



age of the particular pullover worn by your friend. However, generic elements in mental images do not seem to be fully determined. A generic pullover is not a particular style of pullover but rather a pullover whose style is left somewhat vague. Thus, remembering your friend wearing a generic pullover is like imagining a tiger whose number of stripes is indeterminate. And as we saw before, mental images whose contents are in part indeterminate can still count as genuine memories.

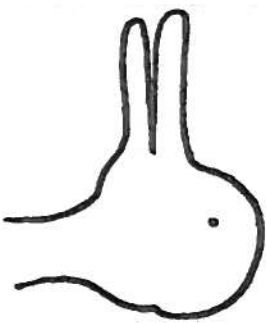


Fig. 4

*Perceptual aspects.* It is common to distinguish between seeing that, seeing as, and simple seeing. You can, for instance, see your friend, you can see that it is your friend, or you can, mistakenly, see your friend as a stranger. Most things can be seen under more than one aspect. Joseph Jastrow's 'duck-rabbit' (figure 4), for instance, can be seen as a picture of a duck or as a picture of a rabbit. Now consider the following case. On Monday you visually represent figure 4 as an image of a duck. On Tuesday you recall the same visual representation but now you see it as a rabbit. Should the mental image you have on Tuesday count as a genuine memory of the your visual representation you had on Monday?

In the above example, the change that takes place between Monday and Tuesday doesn't concern the mental image itself but the interpretation of the image. On Monday figure 4 is interpreted as a duck and on Tuesday it is interpreted as a rabbit. Now if the contents of visual representations are depictive in form, as pictorialism claims, then cases of aspect change pose no special problem for the account of memory. For the depictive content of the memory of figure 4 is the same as that of the past representation of figure 4.

*Memory perspectives.* When you visually remembering a scene you usually remember the scene from a particular perspective. When remembering, say, your friend, the memory image presents her in a particular spatial location vis-à-vis you. You remember her sitting across from you, holding a coffee cup in the

left hand, having the right leg crossed over her left, and leaning against a wall behind her. Typically the spatial perspectival characteristics of a memory image are inherited from the past visual representation. When the perspective of the memory image matches the perspective from which the scene was originally witnessed the memory image is said to be in *field-perspective*. Sometimes, however, we visually remember past events from a different perspective, a so-called *observer-perspective* (Nigro and Neisser 1983; Robinson and Swanson 1993). When remembering a past event from an observer-perspective, the memory image presents the event from a spatial perspective that is not the perspective from which the event was witnessed. The following example from a formal, diary-based psychological study of involuntary autobiographical memories illustrates a switch between the observer and the field perspective:

I see myself dancing at a party at the university. I remember my clothes and my legs (the way they moved). Suddenly, I am 'inside my own body' looking out. A guy I know a little walks by me and says as he passes: 'You look good today' (Bermisen and Rubin 2006: 1193).

Should observer memories count as genuine memories? The main reason to answer in the negative is that observer memories contain information that wasn't available to the subject at the time of the original representation. But then all inferential memories are admixed with inferential reasoning involving background knowledge or fresh information. What, if anything, distinguishes observer memories from other inferential memories? To not count observer memories as inferential memories it would have to be shown that the fresh information contained in observer memories is false or unreliable. However, there is no evidence to suggest that memories from the observer-perspective are any less reliable than memories from the field-perspective. The difference between both kinds of memories has to do with the emotional involvement of the subject, not with reliability. Frequently the adoption of an observer-perspective on past experiences is an avoidance strategy employed by people who have suffered trauma. By distancing themselves from their past selves such people try to spare themselves the horror of reliving certain experiences. Clinical research suggests that memories in field-perspective are better suited for emotional processing than memories in observer-perspective (McIsaac and Eich 2004: 252). Now, given that memories from the observer-perspective are not less reliable

than memories from the field-perspective I see no reason to not count them as instances of inferential memory.<sup>6</sup>

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<sup>6</sup> Debus (2007: 201-2) and Sutton (2010) agree that memories from the observer-perspective can be genuine memories.

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**Volume 22**

# **Mind, Language and Action**

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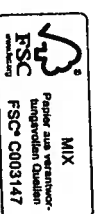
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We would like to dedicate these Proceedings to our dear friend and colleague,  
Laurence Goldstein, whose insights, wisdom and wit enhanced all our  
gatherings in Kirchberg.

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## Preface

The 2013 International Wittgenstein Symposium was an exceptional event in many ways: it was an intellectually and socially vibrant meeting, reminiscent of earlier symposia in which the work of Ludwig Wittgenstein was not background rumble, but the resounding main event. Many of the contributors to this volume are well-known Wittgenstein scholars: H.-J. Glock, Cora Diamond, David Stern, Paul Standish, Charles Travis, Diego Marconi, Laurence Goldstein, John Preston, Anat Biletzki, Garry Hagberg, Anat Matar as well as the next generation of Wittgenstein scholars whose names you may encounter here for the first time; other contributors are prominent representatives of contemporary philosophy or psychology: Shaun Gallagher, David Bakhurst, Jerome Dokic, Elizabeth Pachter, Josef Rothhaupt, Erik Myin, Louise Barrett, John Sutton and Christopher Peacocke.

The 36<sup>th</sup> International Wittgenstein Symposium sought to explore the nature of mind in its relationship to language and action or behaviour. Questions such as: 'What is mind?', 'What is it to be a minded being?', 'How is mentality manifested?' were raised in the context of views that favour an understanding of mentality as enacted or embodied. The nature of mental states, with special emphasis on perceiving and remembering were investigated as well as the nature of action, from its basic forms to mental agency, in its relation to mentality. The rootedness of language in action, and its acquisition in social practices, was also a focus of interest.

As per the tradition of this Symposium, contributions devoted to **Wittgenstein's** work were not bound to address the topics of the conference. They constitute the largest section of this volume and are as rich in their diversity as they are in their content. Other sections, though not focused on Wittgenstein, were highly inspired by his philosophy. The section dedicated to **enactivism and extended mind** explores views that promote an understanding of mentality – cognition, perception, memory, emotion – as enacted, embodied, embedded and extended/extensive. Such approaches are united in rejecting traditional representationalist approaches that favour internalist assumptions. The section on **memory** presents current alternatives to 'archival' or 'localist' models of memory (memory as information *storage*), particularly views of memory as a dynamic activity that is not stored in the person or brain but rather emerges from interaction of the person (and their brain) with the surrounding environment. Contributions on **language-acquisition** evoke the rootedness of language in action, such as primitive reactions and interactions, as well as social