

**Memory and Imagination: Epistemological Perspectives from British  
Empiricists to Neuroscience**

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## **Introduction**

The research concerns whether current neuroscientific theories of memory destabilize the conception of memory as a source of factual truth and whether they challenge the ability to distinguish it from imagination.

Memory relies on previous learning and relates to an actual past. It is perceived as a source of knowledge, a reliable reference to our past. Our belief is that memories in general are trustworthy, that a remembered event probably took place. Imagination, on the other hand, is associated with the unreal and fantastic. We are not obligated to verify its realness or truthfulness and therefore there is no reason to doubt its epistemological status. Not only does imagination not refer to a real past, but also does not necessarily refer to any real existence. Imagination can represent anything, at any time. However these descriptions disregard the complexity of these cognitive acts. Indeed, imagination contains states that are not and cannot be real. However, imagination is not constrained to be fictional but has various manifestations. Imaginings can also be actual and compatible with factual reality. It can also coincide with representations of past occurrences. Alternatively, imagination can deceive us into believe that imaginative representations are true memories rather than products of the imagination. Remembering, on the other hand, can be inaccurate, false, or stem from imagination. We often mistakenly designate memories as products of the imagination and vice versa. Thus, if memory and imagination can represent the same experience, coincide or overlap, how can we distinguish between representations of memory from those of imagination?

The complex association of imagination and memory has led philosophers to try to provide criteria to distinguish between them. The British empiricists, for example, distinguish memory

and imagination in terms of the characteristics of the mental representation. In their view, memory is described with greater vivacity, intensity, stability, and steadiness, in contrast to the protean, volatility, and the voluntarily characteristics of imagination. While the empiricists investigate the quality of the object's content, Husserl, by contrast, investigates acts of consciousness and their relation to their content, what he calls their objects. Since imagination and memory can coincide and represent the same content, memory and imagination are, according to Husserl, distinguished not by their content but instead by the intention and attitude associated with them. Intention determines the way objects appear in consciousness. Memory intends what actually has been, while imagination what might have been, since the content of imagination is not actual. William James maintained that what differentiates memory from imagination is an additional consciousness that constitutes a representation as a memory. Memory images are attended with a feeling of "warmth and intimacy,"<sup>1</sup> and are accompanied with feeling of belief that attributes it to the past, while imagination lacks this feeling. Russell also distinguishes between these two cognitive by the relation that the thinker bears toward the representation. For him, memories are images that are accompanied with feeling of familiarity and are followed by "belief-feeling," a sense that the representation refers to an existing past experience. Other criteria such as how contextual linkages organize one memory in relation to other memories—a function seemingly not present in imagination.<sup>2</sup> Alternatively, Bartlett maintains that remembering is based on one schema, while, in imagination, we construct several different schemas. Another criterion which is used to distinguish memory from imagination is commitment to truth and existence versus the absence of such commitment in imagination.

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<sup>1</sup> Williams James, *The Principles of Psychology*, vol 1, (Cambridge: Harvard University press, 1981), 649.

<sup>2</sup> Brian Smith, *Memory*, Smith, Brian, *Memory*, (London: George Allen & Unwin LTD, 1966), 142-143.



However, findings in neuroscience of memory challenge these criteria and, in fact, undermine all existing ways to distinguish between these two cognitive acts. Neuroscience emphasizes the dynamic process of memory adjustment. Memory is not a literal reproduction of the past, but instead an ongoing constructive process. Memories are modified and reconstructed repeatedly. Cognitive psychologists, who deal with memory expression, investigate how memory is formed, reconstructed and modified, and in what way it conforms to past experiences.<sup>3</sup> These psychologists postulate that memory is a mechanism whose function it is to adapt and adjust to new circumstances and, as a byproduct, memory tends to fail in reproducing reality. For these reasons, memory exhibits forgetfulness, errors, inaccuracy, and distortions.

Following the cognitive psychologists' postulation that memory is a constructive process, neurobiological memory formation theories that examine the underlying neural mechanisms of memory support the dynamic and flexible nature of memory construction at the neurobiological level. Two central theories explain the constructive nature of memory, the Multiple Trace Theory and the Reconsolidation Theory.

Multiple-trace-theory assumes that no single location contains the entire representation of a specific memory. Instead, the features of a memory are spread out and distributed over many locations. Retrieval of a past experience involves a process of assembling scattered memory features from different neuronal locations.<sup>4</sup> However, this assembling is not a simple process in which all the pertained features obey at the time of retrieval and join to form an exact representation of past occurrence. Rather, retrieval is a process in which features from the

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<sup>3</sup> Asher Koriat, "Remembering: Metacognitive Monitoring and Control Processes," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 243.

<sup>4</sup> Morris, Moscovitch, "Memory: Why the Engram is Elusive," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 19.

original memory are omitted or lost, and features from other, associated memories are attached to the retrieved memory. Thus, retrieval of information does not just mean finding a stored object or pulling a past experience out from storage in a particular place,<sup>5</sup> but an active reformation and reconstruction of it.

The revision that neuroscientists have made to consolidation theory also emphasizes the elastic and constructive formation of memory. In the past, researchers claimed that memory consolidation (the process of memory stabilization) takes place only once. According to such accounts, a new memory is initially labile and becomes stabilized over time through the process of consolidation. This process converts an unstable short-term memory into a stable long-term memory. These researchers believed that after consolidation, memories are stable and resilient to disruption.<sup>6</sup> Currently, however, neuroscientists, who study neural processes and mechanisms of memory persistence (e.g. synaptic strength and plasticity), show that consolidation takes place not only after new learning (encoding), but also after every recall (memory retrieval). During retrieval, consolidated memories enter a transient state where they become labile once again, and require another phase of consolidation (known as “reconsolidation”) to persist.<sup>7</sup> The current hypothesis infers that the labile phase of reconsolidation allows new information to be associated with established and reactivated memories.<sup>8</sup> Memory traces are modified and reconstructed to update and adjust them to new circumstances.<sup>9</sup> Every time we recall, new perceptions,

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<sup>5</sup> Endel Tulving, *Element of Episodic Memory*, (New York: Oxford University press, 1983), 5.

<sup>6</sup> Alberini CM, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” *Trends Neurosci* 28, (2005): 51.

<sup>7</sup> Yadin Dudai, “The Neurobiology of Consolidations, Or, How stable is the Engram?” *Ann. Rev. Psychol.*, 55, (2004): 51-86. See also Alberini CM, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” 51.

<sup>8</sup> Tronel S, Milekic MH, and Alberini CM, “Linking New information to a Reactivated Memory Requires Consolidation but not Reconsolidation Mechanism”, *PloS Biol.*, 3(2005): 1630.

<sup>9</sup> Yadin Dudai, “Reconsolidation: The Advantage of Being Refocused”, *Curr Opin Neurobiol* 16(2), (2006): 175.

expectations, attitudes, perspectives are fused into the original memory trace, thereby constructing a new memory, a new meaning.<sup>10</sup> Reconsolidation is a natural process where the memory trace of an event undergoes various modifications. These modifications cannot necessarily be considered errors or fabrication, but rather, are normal brain activity. In other words, memory distortion is characteristic of normal rather than pathological or abnormal remembering. Thus, multiple trace theory and reconsolidation theory bear out the idea that a memory is not a literal reproduction of the past, but instead a constant constructive process. This neurobiological characterization of memory provides a new framework for rethinking memory. If it is true that stored memories are continually being revived and revised through normal brain activity, this finding changes traditional concepts of memory representation. It might challenge the notion that memory is a source of factual truth and, as a result, transform the way we understand memory and remembering.

Thus, neuroscience of memory poses new problems and raises several questions. What is the exact epistemological status of memories? How do neuroscientific models of memory impact the way in which we conceive of and relate to our past and to reality? Can we still speak about truthful memories even if they are in a perpetual state of modification? If our memories are perpetually modified, does this not imply that they are essentially memories of memories and re-remembering of remembering rather than memories of the original perceived experience? Why are memories constantly being revised in the first place? Do these neurobiological insights indicate that memory's function is not confined to represent the past?

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<sup>10</sup> Yadin Dudai, "The Neurobiology of Consolidations, Or, How stable is the Engram?" 51-86. See also Steven, Rose, *The Making of memory, From Molecules to Mind*, (London: Vintage, 2003), 2.

Describing memory as a generative reconstructive process is not different from the way we define imagination. Not only do the description of how memory functions resembles how we characterize the functions of imagination, but neuroscience also shows that memory and imagination share similar functions, and, in addition, that memory and imagination depend on each other—that imagination is involved in remembering the past and remembering the past involves and enables imagining. Their mutual involvement is present in almost every cognitive act. Thus, the intuitive distinction between memory as a true representation of the past and imagination as independent from the real does not reflect the real, complex functions of each cognitive process and the interaction of both on each other. Both imagination and memory are cognitive capacities which alter, compound, dissociate, and reconstruct content. They are not separate cognitive acts responsible for disengaged processes, but, rather, are fused in various types of representation, reflection, simulation, and introspection. This constructive process of remembering integrates additional information and eliminates other elements without our awareness. We are not aware of the processes of association, reconstruction, and adjustment. Thus, the current neuroscientific accounts of memory not only cast doubt on the authority of memory, but in fact undermine the very distinction between memory and imagination. Our memories are accompanied by a misleading belief that they represent the past as it was. Indeed, imagination is not accompanied by this attitude of belief, regardless of whether it is deceptive or not. This, then, raises the question whether we can distinguish imagination and memory if, as neuroscience shows, our belief in the validity of memory is unaware of the process of construction and adjustment and therefore is oft unwarranted. Does this insight mean that we must conceive of memory and imagination as a hybrid, synergic function that blends fact and fiction? Does the process of revision and adjustment transform memory into imagination?

Questions remain about whether there is an effective criterion to identify instances of memory as distinguished from imagination, whether we can exercise memory without imagination.

This research examines these issues. Indeed, some questions might remain unsettled until more research in neuroscience is done. Yet, a comprehensive understanding of the implications that derive from the current neuroscientific paradigms of memory requires a philosophical analysis which has yet not been done. In order to gain a more comprehensive understanding of the concept of memory and how memory relates to imagination, this research approaches memory from an interdisciplinary perspective. It integrates different levels, theories, and paradigms ranging from subfields in neuroscience (such as cognitive neuroscience and neurobiology) to philosophy. In short, the aim of my research is to examine whether the current neuroscientific account of memory casts doubt on the authority of memories, and undermines the distinction between memory and imagination.

Not all kinds of memory are relevant to the following discussion. Certainly, all types of memory share common processes such as encoding, storing, and retrieval, but memory forms are distinguished by their function, features, and content. Some memory types deal with knowledge that is not relevant to the truthfulness-falseness dichotomy. Thus, I will mainly refer to episodic memory and especially autobiographical memory—the memories of personal experiences. Episodic and autobiographical memories hold implications for our understandings of truthfulness and falsity in memory more than any other form. Understanding the epistemology of episodic and autobiographical memory is, as a result, crucial for several applied domains such as in

psychotherapy (in which victims or witnesses may report events that did not happen<sup>11</sup>), or in legal cases and criminal investigations (in which memory reliability is highly important when eyewitness memory is required).<sup>12</sup> In addition to these practical concerns, understanding the way our memory works is also important for how we view ourselves and our reality. We rely on the truth of our memories to form authentic personal identity, and to create trustworthy personal takes on historical events. Thus, the aim of this research is to examine whether neuroscience challenges the epistemological status of memories, and whether it undermines our belief in the reliability of memories and the truthfulness of the remembered.

The research is divided to two sections. The first section deals with various accounts of memory and imagination. It is divided to two chapters. The first chapter discusses the British Empiricists' accounts of memory and imagination—the ways Hobbes, Berkeley and Hume relate to memory and imagination and how they distinguish between these cognitive acts. The second chapter deals with how Husserl distinguishes between imagination and memory. The second section deals with neuroscience of memory and imagination. It is divided into three chapters. The first chapter examines cognitive and neuro-psychological approaches that consider the behavioral expressions and cognitive functions of memory and divide memory into a set of taxonomic systems. The chapter then maps the varieties, forms, and conditions of forgetting, misremembering, and memory distortions. Since I deal here only with memory as a normal state, I do not deal with memory disorders—the states where memory goes wrong due to age related memory loss, Alzheimer disease, or brain injuries. This part also reviews how neuroscientific theories describe

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<sup>11</sup> Elizabeth Loftus, "Changing Beliefs About Implausible Events," *Journal of Experimental Psychology: Applied* Vol. 7, No. 1, (2001): 51-59. Elizabeth Loftus, *Memory Faults and Fixes*, *Issues in Science & Technology*, (2002): 41-50. See also, J., Brainerd, and V. F. Reyna, *The Science of False Memory*, (Oxford: Oxford University Press, 2005), 219 -422.

<sup>12</sup> Elizabeth Loftus, "Our Changeable Memories: Legal and Practical implications," *Nature Reviews: Neuroscience* (2003): 231.

memory formation and maintenance, noting the functions, operations, and processes that underlie memory. The second chapter of this section examines the philosophical conceptualizations, current neuroscientific accounts, and multiple cognitive manifestations of imagination. In the third chapter, I examine the intersections and possible overlap of memory and imagination. In it, I ask whether adjustment mechanisms and brain plasticity force us to consider imagination and memory as elements of one mental process, or whether we can still distinguish between these two cognitive processes and concepts. In this chapter, I examine whether neuroscientific theories of memory formation challenge the prevailing concepts of memory and whether a new, more correct concept been established. In this chapter, I also deal with the functions attributed to memory, challenge the veridicality of memory, and consider the epistemology of adaption.

## **Empiricist theories of memory and imagination: an epistemological perspective on the differences and similarities between memory and imagination**

From the classical Greek to Roman periods, through the Middle Ages, and to the Renaissance of the 17<sup>th</sup> Century, the approach to memory was essentially practical.<sup>13</sup> Inquiry regarding memory was mainly in search of methods and techniques to improve learning and memorizing. The long tradition of mnemonic techniques<sup>14</sup> reached its peak in the renaissance.

Indeed, the British Empiricists were not the first ones to provide philosophical studies on memory. Plato, Aristotle, Augustine and other philosophers preceded them and offered models of memory. However, the British empiricists were the first to give modern epistemological accounts for memory. They dealt with memory as a part of their general concern with the nature of knowledge. They examined the phenomena and mechanism of memory and their relationship to other psychological faculties. One central relationship that the empiricists dealt with is the similarity between memory and imagination. The resemblance is considerable, given that both concepts share the same attributes and functions, and are involved in the formation of ideas from perceptions.

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<sup>13</sup>In their introduction to the anthology *Memory in Historical Perspective, The Literature before Ebbinghaus*, the editors Douglas J. Harmann and Roger Chaffin classified memory theorists into four approaches: pragmatic approach, the practical approach, the pre-theoretical and theoretical approaches and see in Harmann J. Douglas and Roger Chaffin (ed), *Introduction Memory in Historical Perspective, The Literature before Ebbinghaus*, (New York; Springer Verlag, 1988),1-7.

<sup>14</sup> See *Art of Memory* outlined in Frances A. Yates, *The Art of Memory*, (Chicago: The University of Chicago press, 1996).



Following the Cartesian Skepticism, the British empiricists strived to create a systematic theory that would establish validity for the “true knowledge of things.”<sup>15</sup> For the empiricists, knowledge and experience are derived from perceptions. The mental operations of perceiving objects and forming images are ascribed to the imagination faculty. Since perceptions are then converted to images, it was natural for the empiricists to suppose that imagination was also equipped with the ability to retain and rearrange perceptions. In their view, imagination is a very broad concept. For Hobbes, for example, imagination is equivalent to other mental phenomena such as representation, conception and thinking. Imagination contains the capacity to form and retain representations or ideas. It also holds a constructive ability which constitutes thinking, and is involved in the process of generating knowledge and experience. That is, imagination manifests itself not only in the formation of images from sensory experiences, but also in the combination and association of several images into a new composite image. Thereby, imagination holds the ability to invent and fancy. However, fancy was only one aspect among many others and not the dominant one which was assigned to imagination. Most empiricists, in a similar fashion, assign multiple capacities to memory. Hobbes, for example, ascribes to memory the ability to compare, distinguish, and combine sensations to images. Berkeley links imagination and memory to volition and passion, while Hume accredits memory with the cause of belief, casual inference, and the constitution of personal identity.<sup>16</sup>

Both memory and imagination originate from perception and are ranked in a subordinate status to perception in the hierarchical epistemology. The affinity between the two is so great that they

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<sup>15</sup> Locke, *An Essay Concerning Human Understanding*, Epistle to the Reader.

<sup>16</sup> David Hume, *A Treatise of Human Nature*, book I, part IV, Sect. VI. Of Personal Identity.

are presented as two conjunct forms of knowledge, and are regarded as two psychical partners.<sup>17</sup> They possess many identical features, intermingle in their operations, and borrow their objects from one another. There is a constant parallel between them. Each can connect, combine, and dissociate the knowledge that comes from perceptions. Both memory and imagination refer, represent, and are involved in retaining the past. Indeed, the empiricists form close connections between memory and imagination. However, in spite of assigning them multiple common capacities, a tendency to distinguish between them does still exist. Since both images of memory and imagination represent the past, what, then, distinguishes a representation of an image of memory from being an imaginary representation?

According to Hobbes, memory and imagination overlap. They have identical attributes and functions with a very slight difference. They “are but one thing, which for divers consideration hath divers names”. The difference, in his view, depends on whether a sense of time passing is attached to an image, or if the image itself is stressed. Memory, then, implies a time elapsed, while imagination implies the thing itself. Berkeley does not distinguish between memory and imagination, since they produce and carry the same operations. For Berkeley, the crucial distinction exists instead between perception, on the one hand, and imagination and memory on the other. This distinction was defined by realness. Senses are real things, because their existence depends on God, and they are involuntarily. Memory and imagination, on the other hand, are less real because they depend on a human mind’s volition. According to Hume, imagination and memory differ in terms of degree. Hume does not deny that imagination carries a reference to the past. However, he does ascribe more validity and reliability to memory than to

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<sup>17</sup> Edward S. Casey, “Imagination, Fantasy, hallucination, and Memory”, in *Imagination and Its Pathologies*, ed. James Phillips and James Morley, (Massachusetts: The MIT Press, 2003), 65.

imagination. He conceptualizes validity and reliability in terms of degree of vivacity. Memory is more vivid and it keeps the form and order of the past. However, Hume himself indicates qualifications for both these criteria. He is aware that neither relative vivacity nor keeping the form and order of the past are adequate criteria for distinguishing between memory and imagination. There is no way of verifying whether memory keeps the form and order of the no longer existing past. More than that, an idea belonging to memory, can degenerate so much, in losing its vividness, that it could be mistaken for an idea belonging to imagination. Conversely, an idea belonging to imagination can acquire such vividness that it would be mistaken for an idea belonging to memory. It seems that a gradual distinction cannot be grounds for an essential distinction between the two.

In the following chapters I will deal with the distinctions and the similarities that are ascribed to memory and imagination by the philosophers Thomas Hobbes, George Berkeley, and David Hume.<sup>18</sup> However, the examination of these three philosophers will also include, when it is needed, more than a narrow examination of the conceptions memory and imagination since sometimes these conceptions can only be understood by relating to them to the philosopher's whole theory.

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<sup>18</sup> John Locke is not included since he discarded the distinctions and mutual operation of imagination and memory.

## **The scope and function of imagination and memory in Hobbes' natural philosophy**

In Hobbes' natural philosophy, imagination is a broad and comprehensive concept that exhibits different abilities and that relates to various cognitive and psychological capacities, such as thinking, knowing and conceiving among others.<sup>19</sup> The overlap between these various capacities abolishes the distinction between them, on the one hand, and leads to inconsistency and contradictions on the other. One central overlap and resulting inconsistency in Hobbes' natural philosophy exists between the concepts imagination and memory. Hobbes ascribes to both concepts identical attributes and similar functions with a very slight difference. While at the beginning of these issues' consideration, it seems that imagination is a broader and more important concept, later these two conceptions are merged together and at some point memory becomes central. This reversal did not occur because memory was perceived as more reliable than imagination. It also did not occur because imagination was viewed as deceiving and as a threat to reason. Hobbes is not interested in hierarchical theory, a theory in which imagination is believed to be a lower activity of the mind. He has no disdain for imagination. Just the opposite, he eliminates the former distrust attributed to imagination. Imagination is part of his scientific investigation of natural law, "as organic function of the mind."<sup>20</sup> For Hobbes, imagination originates with the senses, and then embodies understanding and knowledge in the mind.

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<sup>19</sup> Hobbes uses the terms imagination, fancy, and phantasm sometimes as identical and sometimes for different uses. He does not make any clear distinction between them. In the following text, I will not deal with the coincidences and differences of these terms so when terms are mentioned either as imagination, fancy or phantasm, I relate to them as synonyms. For Hobbes's uses of the concept imagination see: Juhana Lametti, "The Most Natural and The most Artificial: Hobbes on Imagination", *Hobbes Studies*, Vol. 17, Issue: 1, (January 1, 2005): 48-50; Juhana Lametti, *Imagination and Diversity in the Philosophy of Hobbes*, (PhD diss., Helsinki University Press, Helsinki, 2006), 47-53. Clarence DeWitt Thorpe, *The Aesthetic Theory of Thomas Hobbes*, (Ann Arbor: University of Michigan press, 1940), 79– 85. F.S. McNeilly, *The Anatomy of Leviathan*, (New York: Macmillan, 1968), 30-31. A. p. Martinich, *Hobbes*, (New York, Routledge, 2005), 35-37.

<sup>20</sup> Thorpe, *The Aesthetic Theory of Thomas Hobbes*, 24.

## The different modes of imagination

Hobbes divides the capacities of human beings into two kinds: capacities of the body and capacities of the mind.<sup>21</sup> The mind has two powers: 1) cognitive (also known as imaginative or conceptual);<sup>22</sup> and 2) motive (deliberation and action). By cognitive, Hobbes encompasses capacities such as imagination, knowledge, cognition, conception, etc.

“This imagery, and these representations of the qualities of things outside us, is what we call our ‘cognition’, ‘imagination’, ‘ideas’, ‘notion’, ‘conception’, or ‘knowledge’ of them.”<sup>23</sup>

As equivalent to cognitive capacities such as knowledge, ideas, and thinking,<sup>24</sup> imagination embraces a variety of other mental capacities such as sensations, perception, understanding, memory, dreams,<sup>25</sup> vision, apparition, and beliefs.<sup>26</sup> Imagination is endowed with the ability to divide, distinguish, unite, and associate the images which establish these mental capacities. Because imagination involves such a broad variety of conceptions, and relates to many other mental capacities, the term is not always consistent. In different works of his, it applies to different notions. However, imagination, in its different manifestations, refers to two main modes: one which is responsible for storing and retaining, and the second which is responsible, for constructing and forming capacities. In the first mode, imagination is a capacity

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<sup>21</sup> Thomas Hobbes, *The Elements of Law*, part I, chapter 1:5.

<sup>22</sup> *The Elements Of law*, Part I, Chapter I: 7.

<sup>23</sup> *The Element of Law*, Part I, Chapter 1:8.

<sup>24</sup> See Thomas Hobbes, *Leviathan*, ed with an introduction: J.C.A. Gaskin (Oxford; New York: Oxford University Press, 1996), part I, chapter VIII.

<sup>25</sup> Thomas Hobbes, “Concerning Body” in *English Works*, collected and edited by Sir William Molesworth, Bart, (London, J. Bohn, 1839-1845), Vol. I, IV, 25:7, 396.

<sup>26</sup> For other attributes of imagination such as invention, wit and poetry see: Thorpe, *The Aesthetic Theory of Thomas Hobbes*, 96 – 112.

of the mind, and acts as a mental state equivalent to representation. Imagination is, in that mode, the appearance in the mind of the external object's effect, upon which we rely for knowledge.

In the second mode, imagination is in itself a constructive ability that constitutes thinking and takes part in the process of generating knowledge and experience. Imagination, in this second mode, is the power that enables the encounter of motion from objects with our senses.

In this state there is an overlap between imagination and senses.

### **Imagination derives from the senses**

The scientific method of Hobbes begins with his consideration of the constitutive and structuring elements of our knowledge and cognitive capacities. Though understanding and knowledge are common to men and animals, the knowledge which is peculiar to men consists of conceptions and thoughts. Hobbes distinguishes between two kinds of knowledge: (1) the knowledge of particular facts, and (2) the knowledge of consequences, conception<sup>27</sup> and reasoning. These two kinds of knowledge both stem from the imagination. A thought is a representation or appearance in our imagination of an external object which affects our senses. Imagination is composed of successive images, which are derived from our senses.<sup>28</sup> We conceive and imagine only what we perceive by our senses, and therefore the whole of human knowledge is derived from our senses.<sup>29</sup> Hobbes writes,

“For there is no conception in a man's mind which hath not at first, totally or by parts, been begotten upon the organs of sense.”<sup>30</sup>

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<sup>27</sup>For imagination as equivalent to conception, See: Hobbes, *The Elements of Law*, part I, chapter II.

<sup>28</sup>Hobbes did not say much about the way our senses operate.

<sup>29</sup>Hobbes, *Concerning Body*, vol I, IV, I, p. 389.

<sup>30</sup>Hobbes, *Leviathan*, part I, chapter I. See also *The Elements of Law*, part I, chapter II.

We cannot have any thought or knowledge that does not rely on the different senses and their qualities.<sup>31</sup> By senses, Hobbes means five kinds of senses: sight, hearing, smell, taste, and touch.<sup>32</sup> The sensible qualities (such as colors, sounds, and odors) that we ascribe to objects are not inherent qualities of these objects but apparitions that we receive from the motion or the agitation which the objects stimulate in our brain. Hobbes writes:

“For if those colours and sounds were in the bodies or objects that cause them, they could not be severed from them, as by glasses and in echoes by reflection we see they are: where we know the thing we see is in one place; the appearance, in another. And though at some certain distance the real and very object seem invested with the fancy it begets in us; yet still the object is one thing, the image or fancy is another. So that sense in all cases is nothing else but original fancy caused (as I have said) by the pressure that is, by the motion of external things upon our eyes, ears, and other organs, thereunto ordained.”<sup>33</sup>

A bell, for example, does not produce sound, but produces motions. These motions pass through the air, then press on our ears, pass to our brain, and then become an image.<sup>34</sup> Our senses make us think that these qualities, such as sound, are in the world, while in fact they exist only in the

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<sup>31</sup>Hobbes, *Leviathan*, part I, chapter III.

<sup>32</sup>“By our several organs we have several conceptions of several qualities in the objects; for by sight we have a conception or image composed of colour or figure, which is all the notice and knowledge the object imparteth to us of its nature by the eye. By hearing we have a conception called sound, which is all the knowledge we have of the quality of the object from the ear. And so the rest of the senses also are conceptions of several qualities, or natures of their objects.” *The Elements of Law, Natural and Politic*, part I, chapter II: 3.

<sup>33</sup>*Leviathan*, part I, chapter I.

<sup>34</sup>*Elements of Law*, part I chapter II: 8.

human mind. The cause of the sensation is the motion of the object. Hobbes makes the distinction between the external object of perceptions and perceptual images in the mind:

“And from thence also it followeth, that whatsoever accidents or qualities our senses make us think there be in the world, they are not there, but are seemings and apparitions only. The things that really are in the world without us, are those motions by which these seemings are caused. And this is the great deception of sense, which also is by sense to be corrected. For as sense telleth me, when I see directly, that the colour seemeth to be in the object; so also sense telleth me, when I see by reflection, that colour is not in the object.”<sup>35</sup>

### **Imagination- a decaying sense**

In contrast to Descartes' doubt, Hobbes does not discard external reality, but he does rule out that qualities are parts of the objects, instead describing the objects as consisting of motion. He also dismisses Descartes' dualism by establishing the principles of his natural philosophy on materialism, the idea that the whole universe is corporeal. Hobbes regards the mental activities such as sensations, perceptions, and imagination in terms of matter as well.<sup>36</sup> In his view, we are material objects, as are all the other objects. Through our sense organs, we perceive these other objects that surround us.<sup>37</sup> Since materialism applies to all cognitive capacities, the stimulation in

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<sup>35</sup>The Elements of Law, part I, chapter II: 10.

<sup>36</sup>For a short review of the theories of motion and change from the Greeks to Hobbes see: Thomas A., Spragens, Jr., The politics of Motions: The world of Thomas Hobbes, (Kentucky:The University Press of Kentucky, 1973), 53-76.

<sup>37</sup> MacNeilly, The Anatomy of Leviathan, 31.



our sense organs is therefore produced by motions from the external bodies.<sup>38</sup> The reaction of the senses to objects is of

“resistance or reaction against the motion which is propagated from the object to the innermost part of the organ [...] then from the reaction, how little soever the duration of it be, a phantasm or idea hath its being.”<sup>39</sup>

This is the same with all the senses, such as sight, taste, smell, hearing and feeling.<sup>40</sup> The motions of the bodies are transformed to images, to representation, that eventually become our awareness, our imagination, and conceptions of the world (all of them described alternately as the same). In other words, imagination is the ability of the appearance of the external objects.<sup>41</sup>

Hobbes maintains that all bodies are either in motion or lie still. Their state cannot be changed unless something external either stirs up the motionless things or inhibits the moving things.

“Nothing can change itself.”<sup>42</sup> That is, if an object is inanimate only something external can change its state by stirring it up and alternatively, “it will eternally be in motion unless somewhat else stay it.”<sup>43</sup> The inhibition of the movement will not take place immediately but occurs gradually:

“As we see in the water, though the wind cease, the waves give not over rolling for a long time after; so also it happeneth in that motion which is made in the internal parts of a man, then, when he sees, dreams, etc. For after the

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<sup>38</sup>On Hobbes's theory of motion regarding senses see Richard Peters, *Hobbes*, (Baltimore: Penguin Books, 1956), 103- 115. See also Bernard Gert, “Hobbes's Psychology”, in *The Cambridge Companion to Hobbes*, ed. Tom Sorell, (Cambridge: Cambridge University Press, 1996), 157- 160.

<sup>39</sup>Concerning Body, vol 1, IV, 25: 2, p. 391.

<sup>40</sup>Concerning Body, vol 1, IV, 25: 9.

<sup>41</sup>Leviathan, part I, chapter I.

<sup>42</sup>Leviathan, part I, chapter II.

<sup>43</sup>Leviathan, part I, chapter II.

object is removed, or the eye shut, we still retain an image of the thing seen, though more obscure than when we see it. And this is it the Latins call imagination, from the image made in seeing, and apply the same, though improperly, to all the other senses. But the Greeks call it fancy, which signifies appearance, and is as proper to one sense as to another. Imagination, therefore, is nothing but decaying sense.”<sup>44</sup>

Images or conceptions of external objects remain in our imagination after the external objects cease to appear to us. After the movement has ceased to exist or was inhibited, the effect lingers on but more vaguely than it was at the moment we first encountered it. There is a difference in clarity between the time the object impinges upon our senses and the time the object ceases to appear to us. The distinction between senses and imagination depends on whether the external objects are present. So long as the objects are present, they are in the realm of the senses but the moment the objects cease to appear to the senses, they are established in imagination, which is a “decaying sense.”<sup>45</sup> However, it is not clear what exactly the relationship between sense and imagination is, nor when sense becomes imagination. Also, it is not clear where imagination and sense overlap, or how this overlap is limited.<sup>46</sup>

### **Simple and compound imaginations**

Imagination is divided to two kinds; simple and compound. Simple imaginations are those which are perceived all at once, like an image of man or horse, while compound imaginations are simple ones which were perceived as separate images in different occasions and have been

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<sup>44</sup>Leviathan, part I, chapter II.

<sup>45</sup>Leviathan, part I, chapter II.

<sup>46</sup> On this concern see Juhana Lametti, *Imagination and Diversity in the Philosophy of Hobbes*, 52.

combined to form one image. For example, the image of a man which was perceived at one time and the image of a horse which was perceived at another time form a compound imagination of a centaur.<sup>47</sup> The image of mountain when combined with an image of the color of gold forms a new image of Golden Mountain.<sup>48</sup> Another compound imagination is, for example, when we have an image of ourselves combined with an action of another person, like when a person imagines himself as Hercules. Compound imaginations are fictive imaginations of the mind and do not belong to the real world, “and this composition is what we usually call a *fiction* of the mind.”<sup>49</sup> Thereby Hobbes distinguishes imagination from fiction.<sup>50</sup> While imagination derives from the senses and refers to a real reality, fiction is composed of delusive combinations that we form from two or more separate images. Compounded imaginations are productive but bring about fictitious associations.<sup>51</sup> These images relied on the senses, but their combination brings about unreal and delusive imaginations such as satyrs, fauns, nymphs, fairies, ghosts and goblins. Fiction is attributed to the sphere of illusion, apparition, and of the unreal. Hobbes also describes fictions as a resulting in confusing dreams, with apparitions such as “ghosts and incorporeal substances,”<sup>52</sup> or superstitious and false prophecies which derived from fears and false belief. While Hobbes distinguishes between true imagination and delusive imagination, he does not deal with the reliability of knowledge, that is, the reliability of simple imaginations that are

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<sup>47</sup>Leviathan part I, chapter II.

<sup>48</sup>Elements of Laws, part I, chapter II: 4.

<sup>49</sup>Leviathan part I, chapter II.

<sup>50</sup>Leviathan part I, chapter II.

<sup>51</sup>Hobbes also describes a form of compounded imagination which occurs simultaneously with the process of perception. While Hobbes claims that compound imagination is formed from two imaginations from different times, in Concerning Body, he maintains that the senses work just like the compounded imagination does. Since we cannot perceive more than one object at the same time, that is, since our sense organs can be moved by only one object at a given time, our imagination merges several actions into one imagination. And this action is not perceived as fiction: “And therefore two several phantasms will not be made by two objects working together, but only one phantasm compounded from the action of both.” vol I, IV, 25:6. p. 394.

<sup>52</sup>Concerning Body, vol I, IV 25: 9, p. 402.

produced from sensations. He does not deal with the compatibility between sensations and the external objects,<sup>53</sup> though he does argue against deceiving and illusory common sense which misleads us in believing that the qualities we sense are inherent in the objects themselves:<sup>54</sup>

“From this it also follows that, whatever accidents or qualities our senses make us think there are in the world, they are not out there, but are only seemings and appearances. The things which really exist in the world outside us are the motions by which these seemings are caused. And this is the great sensory illusion; but one which is also to be corrected by sensation. For just as it is sensation which tells me, when I look directly at an object, that the colour seems to be in the object; so also it is sensation which tells me, when I look at a *reflected* object, that colour is *not* in the object.”<sup>55</sup>

This sensory deception is corrected by sensations themselves, by understanding that the existence of objects is equal to reflected objects, distorted objects which are optical errors and do not contain their qualities in themselves. However, this view does not lead Hobbes to indicate a correlation between images and the motions from the external objects. Neither does he deal with whether nor how we know that the internal motions of our brain correspond correctly to the motions of the bodies external to us. He also does not discuss the need to verify the objective imagination of external objects.

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<sup>53</sup>Richard Peters, Hobbes, (Baltimore: Penguin Books, 1956), 109 - 110. See also F.S. McNeilly, p.31.

<sup>54</sup>On the subjectivity of sensible qualities see Cees Leijenhorst, *The Mechanism of Aristotelianism*, (Boston: Brill, 2002), 84- 85.

<sup>55</sup>*Elements of Law*, part I, chapter II:10. See also *Elements of Law* part I, chapter II:IV.

## Memory – decaying of the senses

Hobbes describes the senses as going through process of decay: “Imagination, therefore, is nothing but decaying sense.”<sup>56</sup> However, according to Hobbes, there is no real process of decay in our imagination but instead an obscuring by other dominant objects. Like the stars that are invisible for us during the day because the light of the sun obscures them, our old imaginations become obscure because of impressions of new senses from external objects. The predominant affects obscure the less dominant. The influence of the less dominant objects that is, the objects that we do not sense or experience any more are not removed from our imagination but still have their lingering effect on us.

“Any object being removed from our eyes, though the impression it made in us remain, yet other objects more present succeeding, and working on us, the imagination of the past is obscured and made weak, as the voice of a man is in the noise of the day.”<sup>57</sup>

The strength of the image depends on the time from the original sense impression. Distance of the time has an effect on our imagination.<sup>58</sup> The longer the time that passes the weaker is our imagination. Distance brings about the fading of a perceived object’s small parts, which seem weak and inarticulate. Until this point Hobbes does not draw any distinction between memory and imagination. Quite the opposite, he connects imagination and the past in that imagination

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<sup>56</sup>Leviathan, part I, chapter II.

<sup>57</sup>Leviathan, part I, chapter II.

<sup>58</sup>Hobbes maintains that time and space are imaginary concepts since we do not have any direct experience of them. These two conceptions are deducted from other experience. We experience moving objects but their moving in time or in space is our deduction. On Hobbes’s notions of space and time, see Cees Leijenhorst, *The Mechanisation of Aristotelianism: the Late Aristotelian setting of Thomas Hobbes’ Natural Philosophy*, (Boston: Brill, 2002), 101-137.

carries a sense of time and as a result, the distinction between imagination and memory is abolished:

“So also after great distance of time our imagination of the past is weak; and we lose, for example, of cities we have seen, many particular streets; and of actions, many particular circumstances.”<sup>59</sup>

However the distinction between memory and imagination comes shortly after that. Imagination, according to Hobbes, is the image of the thing itself, in other words the thing which impinges on the senses. Alternatively, memory is the image coupled with a notion of elapsed time, in other words the sense of decaying which attached to the image. Memory retains an image of sensible things after the objects themselves have ceased to appear to us, “[f]or he that perceives that he hath perceived, remembers.”<sup>60</sup> The feeling of elapsed time and therefore the decaying of the senses is what distinguishes imagination from memory. Hobbes actually sees memory and imagination as the same thing but which serve different purposes: imagination describes the image itself, while memory describes the image in its weak and decayed existence:

“This decaying sense, when we would express the thing itself (I mean fancy itself), we call imagination, as I said before. But when we would express the decay, and signify that the sense is fading, old, and past, it is called memory. So that imagination and memory are but one thing, which for diverse considerations hath diverse names.”<sup>61</sup>

Or as he expresses it in *Concerning Body*:

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<sup>59</sup>Leviathan, part I, chapter II.

<sup>60</sup>Concerning Body, vol I, IV, I, p. 389.

<sup>61</sup>Leviathan, part I, chapter II.

“Fancy and memory, differs only in this, that memory supposeth the time past, which fancy doth not. In memory, the phantasms we consider as if they were worn out with time, but in our fancy we consider them as they are; which distinction is not of the things themselves, but of the considerations of the sentient. For there is in memory something like that which happens in looking upon things at a great distance; in which as the small parts of the object are not discerned, by reason of their remoteness; so in memory, many accidents and places and parts of things, which were formerly perceived by sense, are by length of time decayed and lost.”<sup>62</sup>

Memory and imagination are almost the same thing (in contrast to fiction) and to some extent coincide.<sup>63</sup> The difference between them is sensible. When we express the process of decay and signify the change in the original sense impression, we refer to memory. When we refer to the thing itself without its decay, it is the imagination. The only criterion for distinguishing memory from imagination is the growing of decay and vagueness of the image. However, this was the same criterion that Hobbes uses to distinguish imagination from senses (see few pages back). The decaying of the senses is what turns senses to imagination. Nevertheless, this same criterion also becomes the distinguishing criterion between imagination and memory. As a result, it seems that in some places in the text, imagination is identical with sense and in some other places, with memory.

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<sup>62</sup>Concerning Body, vol I, IV, 25:8. p.399.

<sup>63</sup>Tom Sorell, “Hobbes's Psychology”, in *The Cambridge Companion to Hobbes*, ed. Tom Sorell, (Cambridge: Cambridge University Press, 1996), 83 -85.

The decay of senses is not due to any inherent tendency to languish but to the competitive interference of later impressions which leave the prior ones in a concealed state:

“From hence it is manifest, that every endeavour of the organ outwards, is not to be called sense, but that only, which at several times is by vehemence made stronger and more predominant than the rest; which deprives us of the sense of other phantasms, no otherwise than the sun deprives the rest of the stars of light, not by hindering their action, but by obscuring and hiding them with his excess of brightness.”<sup>64</sup>

In the *Elements of Law* Hobbes attributes another feature to memory- recognition, the awareness of having experienced a similar thing previously. We experience external objects through our senses, but when an imagination reappears, and we are aware of a conception originating from the past, this is “classed as a sixth sense, but an internal one, not an external one like the others; and it is usually called ‘memory’.”<sup>65</sup> The two above distinctions of memory from imagination are similar and connected. The first distinction expresses how memory relates to fading and weakening sense, while the second distinction includes an awareness of already having received an imagination in the past and having it again now. This second attribution leads to a third one, which Hobbes ascribed to memory – Judgment. While in other places Hobbes merges sense and imagination here he combines memory and sense:

“For by sense, we commonly understand the judgment we make of objects by their phantasm; namely by comparing and distinguishing those phantasms;

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<sup>64</sup>Concerning Body, vol I, IV, 25:6, p 396.

<sup>65</sup>The Elements of Law, part I, chapter III: 6.



which we could never do, if the motion in the organ, by which the phantasm is made did not remain there for some time, and make the same phantasm return. Wherefore sense, as I here understand it, and which is commonly so called, hath necessarily some memory adhering to it, by which former and later phantasms may be compared together and distinguished from one another”<sup>66</sup>

The abilities to compare and to distinguish, which were previously attributed to imagination, here are attributed to memory.<sup>67</sup> It is memory which is infused in our senses and which enables us to perceive through our senses. Without comparing and distinguishing imaginations from each other, there is no way to make conceptions. Memory is the tool which provides an awareness of the past, but it also enables us to make conceptions by comparing and distinguishing.

“For he that thinketh, compareth the phantasms that pass, that is, taketh notice of their likeness or unlikeness to one another. And as he that observes readily the likenesses of things of different natures, or that are very remote from one another, is said to have a good fancy; so he is said to have a good judgment, that finds out the unlikenesses or differences of things that are like one another. Now this observation of differences is not perception made by a common organ of sense, distinct from sense or perception properly so called, but it is memory of the differences of particular phantasms remaining for some time; as

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<sup>66</sup> In Concerning Body Hobbes attributes judgment to phantasm, see: vol 1, IV, 25: 5 p. 393.

<sup>67</sup> See for example “Judgment [...] is gotten by experience; and experience is store of phantasm, arising of the sense of very many things.” Concerning Body, vol I, part IV, 25:8, p.398. Or “For he that thinketh, compareth the phantasms that pass, that is taketh notice of their likeness or unlikeness to one another. And as he that observes readily the likeness of things different natures, or that are very remote from one another, is said to have a good fancy; so he is said to have a good judgment, that finds out the likeness or differences of things that are like one another. Now this observation of differences [...] is memory of the differences of particular phantasms remaining for some time.” Concerning Body, vol I, part IV, 25:8, p. 399.

the distinction between hot and lucid, is nothing else but the memory both of heating, and of enlightening object.”<sup>68</sup>

Hobbes also adds the ability to conjecture to memory. Old people have the ability to conjecture better since they remember more and have more experience.<sup>69</sup>

“Nevertheless, it is obvious that the people who have had most experience will make the best conjectures, because they have the most signs to conjecture by. This is why, other things being equal, old people are more foresightful, that is, conjecture better, than young people. For, being older, they remember more; and experience is nothing other than remembering. And people who have a quick imagination, other things being equal, are more foresightful than people with slow imaginations, since they observe more in less time. And foresightfulness is nothing other than conjecture from experience, or cautiously taking signs from experience — that is, so that all the individual experiences from which the signs are taken are remembered, otherwise events which seem alike might not really be alike.”<sup>70</sup>

The ability to make good judgments and to have foresight also leads to the ability to make conceptions of the future out of conceptions of the past. The consequences of the past enable us to deduce possible consequences of the future:

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<sup>68</sup>Concerning Body, vol 1, IV, 25:8, p. 399.

<sup>69</sup>“Much memory, or memory of many things, is called experience”. Leviathan, part I, chapter II.

<sup>70</sup>The Elements of Law, part I, chapter 4:10.

“And in this way, we turn remembering into foreseeing, or conjecturing what will happen, or an expectation, or an assumption about the future.”<sup>71</sup>

Finally, the collaboration between sense and memory forms our knowledge:

“There are two kinds of knowledge. One is nothing other than sensation, or original knowledge (as I said at the beginning of Chapter 2), and the memory of it. The other is called ‘scientific knowledge’, or knowledge of the truth of propositions and of what things are called; and it is derived from understanding. Both kinds of knowledge are nothing other than experience: sensation is the experience of the effects of things which influence us externally; and scientific knowledge is the experience people have of the proper use of names in language. And since, as I have said, all experience is nothing but remembering, it follows that all knowledge is remembering. When we record the former in books, it is called ‘history’; and when we record the latter, it is called the ‘sciences’.”<sup>72</sup>

## **Conclusion**

Hobbes's accounts of memory and imagination overlap and are even identical. Therefore, they are contradictory. He assigns the same scope and function to imagination as he does to memory. Since their attributes are identical, differences between them become blurred. While at the beginning of his account on the way senses and imagination operate, Hobbes connects imagination and the senses very closely. It even seems that imagination and the senses coincide

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<sup>71</sup>The Elements of Law, part I, chapter 5.

<sup>72</sup>The Elements of Law, part I, chapter 6.

since it is not quite clear in what point they are distinguished. However he tries to distinguish between imagination and the senses by defining imagination as a decaying sense: “Imagination therefore is nothing else but sense decaying, or weakened, by the absence of the object.”<sup>73</sup> Here, imagination is conceived as a very broad term which includes memory and senses together with others capacities such as dream and fiction. In some other texts, Hobbes elaborates his psychological philosophy, where a very similar view regarding imagination also applies to memory. He ascribes the same functions to memory which were also ascribed to imagination. Examples include constructing, understanding, retaining images and knowledge, responsibility for experience, and the ability of comparing and distinguishing (i.e. judgment). Even Hobbes’ apparently consistent distinction regarding memory and imagination (where he attaches a sense of the past to memory) is not consistent because Hobbes distinguishes imagination from sense by the same definition in that “imagination is decaying sense.”

How can one solve these contradicting statements regarding memory and imagination? What are the limits, functions, and relations of senses, memory, and imagination?<sup>74</sup> Do memory and imagination possess the same features? Do they have the same function?

It seems that even with a very prudent and careful reading of Hobbes's texts, this contradiction will not be solved unless we understand them as indeed the same thing and to assert that the only difference between them is that imagination indicates itself while memory indicates the decaying

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<sup>73</sup>Concerning Body, IV, 25, 8, p. 396.

<sup>74</sup>Thorpe, 1940, p. 113.

that “supposeth the time past.”<sup>75</sup> “So that imagination and memory are but one thing, which for diverse considerations hath diverse names.”<sup>76</sup> That is, they are two aspects of the same thing.

### **Berkeley’s two mental events: Ideas of senses and ideas of imagination and memory**

At first, Berkeley’s philosophy may not seem an obvious choice for dealing with the relation between memory and imagination. It is, indeed, true that Berkeley does not distinguish between these two faculties. He either treats them as the same or just ignores their differences. However, Berkeley’s philosophy is very pertinent and relevant to this deliberation. He describes sense, imagination, and memory as having the same ontological status, on the one hand, but distinguishes their epistemological status on the other. Senses, imagination, and memory are all ideas but they are different in their realness.

### **Idealism – the denial of matter**

Berkeley’s primary motivation is to refute the principles which lead to skepticism. In response to this concern, he denies metaphysical dualism — the existence of two different kinds of substances, spirit and matter.<sup>77</sup> Dualism assumes a difference between real physical entities (which have external and independent existence) and ideas that represent these physical entities.<sup>78</sup> The existence of two different kinds of substance leads to a contradiction, inconsistency, and epistemological skepticism, since these external entities are impenetrable. Our senses cannot inform us of things that exist externally to the mind. There is no way to insure that

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<sup>75</sup>Concerning Body, part I, chapter IV, 25: 8, p. 398.

<sup>76</sup>Leviathan, part I, chapter II.

<sup>77</sup>George, Berkeley, A Treatise Concerning the Principles of Human Knowledge, 1710, part I, section 86. In the next footnotes it will be cited in abbreviation PHK and by section number.

<sup>78</sup> PHK, sec. 86.

the things that are perceived in our mind are compatible with those that exist outside the mind. We see only appearances, not the real qualities of things. In this state, the knowledge that we have is inferred from our perceptions. One cannot be certain of having any real knowledge of external reality at all. This stand, which led him to his theory, is manifested repeatedly.

“THE EXISTENCE OF EXTERNAL BODIES AFFORDS NO  
EXPLICATION OF THE MANNER IN WHICH OUR IDEAS ARE  
PRODUCED.”<sup>79</sup>

There is no way to know how ideas can be produced from external objects. There is no way to know:

“[i]n what manner BODY CAN ACT UPON SPIRIT, or how it is possible it should imprint any idea in the mind.”<sup>80</sup>

Berkeley responds to the problem that dualism implies. He tries to provide a metaphysics which is free of skepticism. In order to overcome skepticism, he denies the existence of matter and reduces all things to immaterial substances. He constructs an ontology which denies any external corporal materials and acknowledges only ideas. The existence of ideas depends on minds with which to perceive them. Similar to Hobbes, Berkeley opposes the position that maintains sensible qualities are part of the material objects. However, his solution was the extreme opposite of Hobbes' solution. While Hobbes posits materialism, Berkeley posits Idealism. Hobbes, who dismisses Descartes' skepticism and dualism, rules out that properties and qualities are inherent in external bodies themselves, however he does not discard the

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<sup>79</sup> PHK sec. 19.

<sup>80</sup> PHK, sec. 19.

existence of external substance. On the contrary, he applies materialism to all bodies in the external world as well as to mental activities. Hobbes reduces everything to motion.<sup>81</sup> Berkeley also rejects the distinctive ontology which Locke ascribes to primary and secondary qualities.<sup>82</sup> Locke distinguishes between primary (size, shape, solidity, motion, etc.) and secondary qualities (colors, sounds, tastes, etc.). While primary qualities are qualities which exist in the material objects themselves, secondary qualities are those object's ability to produce senses in us. These secondary qualities exist not in the objects themselves but are produced by human imagination.<sup>83</sup> Locke assigns an external existence to primary qualities. He does not deny material existence, but he maintains that secondary qualities are sensations or ideas existing only in the mind. Berkeley denies that primary and secondary qualities have a different ontology and confers the same status to both of them because both of them exist at the moment that the mind perceives them. He denies either primary qualities or secondary qualities as having external existence outside the mind. Thus, the project of denying dualism in order to overcome skepticism leads Berkeley to the exact opposite position as Hobbes. It also leads Berkeley to reject Locke's distinction between primary and secondary qualities. He dismisses dualism and the existence of material substance<sup>84</sup> and posits immaterialism.<sup>85</sup> Berkeley writes,

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<sup>81</sup> See the part which deals with Hobbes.

<sup>82</sup> PHK, sec. 9. See also Jackson Reginald, "Locke's Distinction between Primary and Secondary Qualities in Locke and Boyle" in *Locke and Berkeley, A collection of Critical essays*, ed. C. B. Martin and D. M. Armstrong, (London: University of Notre Dame press, 1968), 53-77.

<sup>83</sup> John Locke, *An Essay Concerning Human Understanding*, Book II, sec, VIII.

<sup>84</sup> The existence of material substance is for Berkeley "WORDS WITHOUT A MEANING." It is an empty expression. PHK, 24.

<sup>85</sup> Berkeley's immaterialism indeed belongs to the idealist tradition yet he is considered as empiricist since all the knowledge is received from the senses. See discussion on that in Michael R., Ayers, *Berkeley, "Ideas and Idealism,"* in *Reexamining Berkeley's Philosophy*, ed. Stephen H. Daniel, (Toronto: University of Toronto Press, 2007) 12-13. See also Lisa J. Downing, "Berkeley," in *A Companion to the Philosophers*, ed. Robert L. Arrington, (MA: Blackwell: Malden, 1999), 169.

“To explain the phenomena, is all one as to shew why, upon such and such occasions, we are affected with such and such ideas. But how Matter should operate on a Spirit, or produce any idea in it, is what no philosopher will pretend to explain; it is therefore evident there can be no use of Matter in natural philosophy. Besides, they who attempt to account for things do it not by corporeal substance, but by figure, motion, and other qualities, which are in truth no more than mere ideas, and, therefore, cannot be the cause of anything, as hath been already shewn”.<sup>86</sup>

Berkeley rules out two level of existence: he dismisses materialism, the corporeal substance of the sensible objects, and he dismisses the existence of sensible qualities separated from a perceiver. There are no outward objects. These qualities “are ONLY IDEAS EXISTING IN THE MIND.”<sup>87</sup> All qualities like size, motion, and velocity exist in the mind. Therefore, we should not assume that ideas are formed from material bodies but rather from other ideas. In this way, Berkeley resolves the problem of epistemological validity by dismissing the problem of matching internal ideas to external material objects.

### **The real existence and the cause of ideas**

The denial of matter does not imply the denial of real existence. By ruling out the material or corporal existence, Berkeley does not deny the real existence of things.

“I do not argue against the existence of any one thing that we can apprehend either by sense or reflexion. That the things I see with my eyes and touch with

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<sup>86</sup> PHK, 25.

<sup>87</sup> PHK, 9.



my hands do exist, really exist, I make not the least question. The only thing whose existence we deny is that which philosophers call Matter or corporeal substance”<sup>88</sup>

He eliminates the opposition of idea to matter and designates an objective existence to ideas of senses. However, the reality does not exist in ideas themselves but instead depends on a state of perceiving. The reality of sensible things consists in their being perceived. All sensible objects such as tables, chairs, houses, mountains, rivers, for example, do not have existence distinct from the mind perceiving them. Reality lies in ideas themselves as directly perceived by us.

“For as to what is said of the absolute existence of unthinking things without any relation to their being perceived, that seems perfectly unintelligible. Their ESSE is PERCIPI,<sup>89</sup> nor is it possible they should have any existence out of the minds or thinking things which perceive them.”<sup>90</sup>

Objects exist only by the epistemic activities of our mind and therefore have no substance distinct from their being perceived. Perceiving takes place through a variety of capacities such as willing, imagining, and remembering. The perceiver, in whom ideas exist, has several synonyms such as mind, spirit, soul and the self.<sup>91</sup>

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<sup>88</sup> PHK, sec. 35.

<sup>89</sup> To be is to be perceived.

<sup>90</sup> PHK 3. “In a word all those bodies which compose the mighty frame of the world, have not any subsistence without a mind, that their BEING (ESSE) is to be perceived or known; that consequently so long as they are not actually perceived by me, or do not exist in my mind or that of any other CREATED SPIRIT, they must either have no existence at all, OR ELSE SUBSIST IN THE MIND OF SOME ETERNAL SPIRIT --it being perfectly unintelligible, and involving all the absurdity of abstraction, to attribute to any single part of them an existence independent of a spirit.” PHK, 6. See also PHK, 90.

<sup>91</sup> PHK, 2.

Berkeley's idealism is opposed to solipsism. He does not maintain that only his own mind exists. Rather, he recognizes that there are many other minds that exist and perceive<sup>92</sup> and besides all these distinct human minds, there is the mind of God. However, the dependence of ideas upon perceiving leads to the conception that ideas are subjective because each mind perceives ideas in an individual way. However, Berkeley maintains that our ideas are objective. They do not depend on our own will or volition but instead on God's will. According to Berkeley, the objective reality of ideas is guaranteed by the immediate cause which is God. The things which we perceive do not exist except in our mind, but they also exist independently of our mind.<sup>93</sup> That is, God produces sensible ideas and the combinations between them.

“That sensible things can't exist except in a mind or spirit. From this I conclude not that they have no real existence but that - seeing they don't depend on my thought, and have an existence distinct from being perceived by me - there must be some other mind in which they exist. As sure as the sensible world really exists, therefore, so sure is there an infinite, omnipresent Spirit who contains and supports it.”<sup>94</sup>

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<sup>92</sup>“For, though we hold indeed the objects of sense to be nothing else but ideas which cannot exist unperceived; yet we may not hence conclude they have no existence except only while they are perceived by us, since there may be some other spirit that perceives them though we do not. Wherever bodies are said to have no existence without the mind, I would not be understood to mean this or that particular mind, but all minds whatsoever. It does not therefore follow from the foregoing principles that bodies are annihilated and created every moment, or exist not at all during the intervals between our perception of them.” PHK, 48.

<sup>93</sup>George Berkeley, “Three Dialogues Between Hylas and Philonous”, in *The Works of George Berkeley, D.D., Late Bishop of Cloyne in Ireland*, (London, 1820) Vol 1, 164. The following abbreviation for this book will be DHP.

<sup>94</sup>DHP, 160. See also “CAUSE OF IDEAS.--We perceive a continual succession of ideas, some are anew excited, others are changed or totally disappear. There is therefore some cause of these ideas, whereon they depend, and which produces and changes them. That this cause cannot be any quality or idea or combination of ideas [...] It must therefore be a substance; but it has been shown that there is no corporeal or material substance: it remains therefore that the CAUSE OF IDEAS is an incorporeal active substance or Spirit.” PHK, sec. 26.

## **Distinction between two mental events: ideas of senses and ideas of imagination and memory**

There are two kinds of entities according Berkeley: minds (also called spirits and selves) and ideas. The mind is not idea but stands for a mental substance which is different from ideas. It supports ideas but is entirely distinct from them.<sup>95</sup> By ideas, Berkeley refers to the immediate perception of sensible things (in contrast to inference). Examples of ideas include a variety of sensations such as sounds, sight, taste, touch and the like. Ideas are both sensory and mental occurrences. Ideas and minds excite two different modes: ideas are constructed as a passive state and minds as an active state. Ideas are sensible things, objects of thought, and objects of perception. In this sense ideas are sensations and therefore they are passive. Minds, on the other hand, produce active modes like acts of thought, and acts of operation (such as understanding, willing, imagining, remembering and the like.)<sup>96</sup> Although Berkeley distinguishes between ideas as objects and acts of thought/perceiving, he characterizes ideas as objects of thought at the time of perceiving. That is, since ideas are real entities which exist only at the time of perceiving, they can be seen as both objects and also acts of perceiving.<sup>97</sup> The constitution of ideas' objects is an epistemic activity of perceiving and combining sensible qualities. While it seems that the distinction between objects and acts of thought is not clear and that there is superimposition of objects on acts of thought, Berkeley distinguishes between perceiving vs. imagination/memory. He makes a distinction between two different kinds of ideas: ideas of senses and ideas of

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<sup>95</sup>“But, besides all that endless variety of ideas or objects of knowledge, there is likewise something which knows or perceives them, and exercises divers operations, as willing, imagining, remembering, about them. This perceiving, active being is what I call mind, spirit, soul, or myself. By which words I do not denote any one of my ideas, but a thing entirely distinct from them, wherein, they exist, or, which is the same thing, whereby they are perceived- for the existence of an idea consists in being perceived.” PHK, sec. 2.

<sup>96</sup> See Kenneth P. Winkler, *Berkeley An Interpretation*, (Oxford: Clarendon Press, 1989), 4.

<sup>97</sup> Winkler claims for ideas as objects and not as act of thought, see p. 3-6.

imagination and memory. His idealism leads him designate all types of ideas as having the same ontology but different epistemological status. Ideas of senses and ideas of imagination and memory are assigned with different attributes and different levels of realness. Ideas of senses constitute real things.<sup>98</sup> They are stronger and more vivid. They exhibit steadiness and vivacity and are excited according to order and coherency, while ideas of imagination and memory are either representations of the corresponding ideas of senses or are inventions of our mind. These ideas of imagination and memory are faint, excited at random, and have less reality in them than ideas of senses.

“The ideas imprinted on the Senses by the Author of nature are called REAL THINGS; and those excited in the imagination being less regular, vivid, and constant, are more properly termed IDEAS, or IMAGES OF THINGS, which they copy and represent.”<sup>99</sup>

Berkeley addresses the difference between ideas of senses and ideas of imagination in terms of their reality, by appealing to the source of ideas, and their voluntarily or involuntarily nature. Ideas of senses are excited by God’s will and are forced upon the passive human mind.

“IDEAS OF SENSATION DIFFER FROM THOSE OF REFLECTION OR MEMORY.--But, whatever power I may have over MY OWN thoughts, I find the ideas actually perceived by Sense have not a like dependence on my will. When in broad daylight I open my eyes, it is not in my power to choose whether I shall see or no, or to determine what particular objects shall present

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<sup>98</sup> DHP, 163-164.

<sup>99</sup> PHK, sec. 33.

themselves to my view; and so likewise as to the hearing and other senses; the ideas imprinted on them are not creatures of my will. There is THEREFORE SOME OTHER WILL OR SPIRIT that PRODUCES THEM.”<sup>100</sup>

Ideas of senses, which are excited by God’s will in accordance to the laws of nature, form our experience:

“LAWS OF NATURE.--The ideas of Sense are more strong, lively, and DISTINCT than those of the imagination; they have likewise a steadiness, order, and coherence, and are not excited at random, as those which are the effects of human wills often are, but in a regular train or series, the admirable connexion whereof sufficiently testifies the wisdom and benevolence of its Author. Now THE SET RULES OR ESTABLISHED METHODS WHEREIN THE MIND WE DEPEND ON EXCITES IN US THE IDEAS OF SENSE, ARE CALLED THE LAWS OF NATURE; and these we learn by experience, which teaches us that such and such ideas are attended with such and such other ideas, in the ordinary course of things.”<sup>101</sup>

Ideas of sense depend upon two different things. First, they are produced by God. However, since sensible qualities cannot subsist in themselves or in external material, they depend upon being perceived immediately and involuntarily by human minds. Perceived sensations (which are excited systematically) form our experience, and indicate to us the laws of nature. These ideas of sense are the source for ideas of imagination and memory. After being

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<sup>100</sup> PHK, sec. 29.

<sup>101</sup> PHK, sec. 30.

perceived by the mind, perceptions become objects of volition and passion. Ideas of senses involve volition and are excited at will<sup>102</sup> become ideas of imagination.

“I find I can excite ideas in my mind at pleasure, and vary and shift the scene as oft as I think fit. It is no more than willing, and straightway this or that idea arises in my fancy; and by the same power it is obliterated and makes way for another. This making and unmaking of ideas doth very properly denominate the mind active.”<sup>103</sup>

It seems that what differentiates between ideas of senses and ideas of imagination is the state of the mind: voluntarily connected with the mind being active and involuntarily with the mind being passive. While the mind is passive, it cannot control the perceiving of sensible ideas because it perceives sensations as they are, though while the mind is active, it creates and forms ideas of imagination and memory. Imagination and memory are free to shift, to eliminate, or to distort ideas of sense according to their own will. Berkeley ascribes the ability to combine ideas of senses to all sorts of ideas to imagination and memory.

“It is evident to any one who takes a survey of the objects of human knowledge, that they are either ideas actually imprinted on the senses; or else such as are perceived by attending to the passions and operations of the mind; or lastly, ideas formed by help of memory and imagination- either

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<sup>102</sup>“Phil: The ideas formed by the imagination are faint and indistinct; they have, besides an entire dependence on the will. But the ideas perceived by sense, that is, real things, are more vivid and clear, and being imprinted on the mind by a spirit distinct from us, have not the like dependence on our will. There is therefore no danger of confounding these with the foregoing: and there is as little of confounding them with the visions of a dream, which are dim, irregular, and confused. And though they should happen to be never so lively and natural, yet by their not being connected, and of a piece with the preceding and subsequent transactions of our lives they might be easily distinguished from reality.” DHP, 189.

<sup>103</sup>PHK, sec. 28.

compounding, dividing, or barely representing those originally perceived in the aforesaid ways.”<sup>104</sup>

Memory and imagination combine<sup>105</sup> the different senses to make complex ideas which can last longer than ideas of senses. Berkeley attributes two kinds of combination to ideas of imagination and memory: first, the combination of ideas of sense, which leads to copy and representation, and second, invention and fancy. According to our experience, combination and association lead to correlation between the senses and imagination and memory. In this case, ideas of imagination and memory are copies and representations of ideas of senses.<sup>106</sup> The second kind of compounding diverges from reality in free association, which lacks any strict correlation to ideas of sense. Berkeley does not provide any distinctive features which will enable us to distinguish between these two different kinds of compounding. Whether a correlation exists between the two kinds of ideas, or whether ideas of imagination and memory exceed the representation of their corresponding ideas of senses and thereby become fiction, ideas of imagination and memory always correspond and rely on sensation.

“But my conceiving or imagining power does not extend beyond the possibility of real existence or perception. Hence, as it is impossible for me to see or feel anything without an actual sensation of that thing, so is it impossible for me to conceive in my thoughts any sensible thing or object distinct from the sensation or perception of it.”<sup>107</sup>

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<sup>104</sup>PHK, sec. 1.

<sup>105</sup>See also Richard Glauser, “The problem of Unity of a Physical Objects in Berkeley”, in *Reexamining Berkeley’s Philosophy*, ed. Stephan H. Daniel, (Toronto: University of Toronto Press, 2007), 66-69.

<sup>106</sup> Glauser, “The problem of Unity of a Physical Objects in Berkeley”, 56.

<sup>107</sup> PHK, sec. 5.

On the other hand, even when ideas of imagination and memory correlate to ideas of senses, there is no adequate representation. This leads to the distinction in regards to the degree of reality and subjectivity inherent in ideas of senses and ideas of imagination and memory. While people perceive the same things, they imagine differently as can be seen from the following exchange:

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**Hyl:** ... Pray are not the objects perceived by the senses of one, likewise perceivable to others present? If there were a hundred more here, they would all see the garden, the trees, and flowers as I see them. But they are not in the same manner affected with the ideas I frame in my imagination. Doesn't this make a difference between the former sort of objects and the latter?

**Phil:** I agree it does; and I have never denied that the objects of sense are different from those of imagination.<sup>108</sup>

While ideas of senses do not depend on the human mind's will — and therefore are objective and can be perceived by all human minds — ideas of imagination are composed from our own ideas in a subjective way.

Because ideas of senses are perceived immediately and simultaneously, they exist only at the moment of perceiving, and therefore do not last long. They are not inherent in the human mind. Ideas of sense leave traces in our mind, and these traces are ideas of imagination and memory. The distinction is in degree of realness and dependence on different source (i.e. whether from God's mind or a human mind). Ideas of senses which are imprinted from external source that is God, their validity is not questionable. These ideas are ideal but also real things. Conversely,

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<sup>108</sup> DHP, 203-204.



ideas of imagination and memory are of questionable or even doubtful validity because they are reconstructed by human mind. In other words, being involuntary is a necessary condition for being a real thing. The real is what comes to us without our volition. Excited by God's will, ideas of sense are delivered according to the laws of nature. They are thus regular and constitute the coherent and real world. Ideas of imagination and memory, which are excited by the human mind according to its own will, can indeed compound their ideas in a variety of ways. However, these ideas are either copies or representations of ideas of senses or else chimeras — that is, fancy and invention. They are less real than ideas of senses which are imposed on us from God. Even with all the different attributes mentioned above, the question of what exactly are ideas of sense or imagination is not resolved. There is an inability to distinguish between images from ideas of senses and images from ideas of imagination and memory since all ideas have the same ontological status. They are all composed of the same kinds of substance, in that all of them are mental constitutions, mental ideas.<sup>109</sup> The question is whether ideas which are accorded the same ontological status can be different entities. Ideas of sense, according Berkeley, are the things themselves. They are not representations. However, it is impossible to distinguish between the two kinds of ideas in terms of their reality. While there are some difficulties in the distinguishing between sensations and imaginations, Berkeley does not distinguish between imagination and memory (in other words, between ideas of imagination and ideas of memory) but instead fuses them. While Berkeley describes sense and imagination as having different epistemological status, he assigns imagination and memory the same epistemological standing. Both are either copies and representations, or invention and fancy, and thereby are less real than ideas of senses.

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<sup>109</sup>All ideas are particular, and Berkeley denies the existence of general or abstract ideas.

## Hume's criteria for memory and imagination

Hume bases the epistemological foundations of knowledge on the basic element of consciousness and thought, that is, perception. Perceptions are divided into impressions and ideas. Impressions and ideas compose both memory and imagination. We think either through memory or through imagination. Both of them originate from the same source and are related to other epistemological capacities. Memory has a central role in providing the starting point for belief, casual inference, and also in constituting a sense of personal identity by creating a bond between various experiences.<sup>110</sup> Imagination, which is represented throughout the treatise as an equivalent to the ability of thinking, also operates as a crucial component in our personal identity. Imagination produces unity of ideas through three principles — resemblance, contiguity and causation<sup>111</sup> — which constitute our personal identity.<sup>112</sup> Through these principles, imagination separates, combines, connects,<sup>113</sup> associates, and reunites different ideas in our

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<sup>110</sup>Hume, *A Treatise of Human Nature*, book I, part IV, Sect. VI. Of Personal Identity.

<sup>111</sup>“The imagination must by long custom acquire the same method of thinking, and run along the parts of space and time in conceiving its objects.” Book I part I section IV. Or “First, We have observed, that whatever objects are different are distinguishable, and that whatever objects are distinguishable are separable by the thought and imagination.” Book I, part I, section VII. Of Abstract Ideas.

<sup>112</sup> Identity is “merely a quality, which we attribute to them [perceptions], because of the union of their ideas in the imagination, when we reflect upon them [perceptions]. Now the only qualities, which can give ideas an union in the imagination, are these three relations above-mentioned. There are the uniting principles in the ideal world, and without them every distinct object is separable by the mind, and may be separately considered, and appears not to have any more connexion with any other object, than if disjoined by the greatest difference and remoteness. It is, therefore, on some of these three relations of resemblance, contiguity and causation, that identity depends; and as the very essence of these relations consists in their producing an easy transition of ideas; it follows, that our notions of personal identity, proceed entirely from the smooth and uninterrupted progress of the thought along a train of connected ideas, according to the principles above-explained.” Book I, part IV, sect. VI. Of Personal Identity.

<sup>113</sup>“By which two ideas are connected together in the imagination.” Book I, part I, Sect. V. Of Relations.

consciousness. Imagination forms a transition from one idea to another. It also separates simple ideas<sup>114</sup> and then reunites them in a different ways to make complex ones.<sup>115</sup>

Both memory and imagination involve the operations of cause and effect and inference and both also play central role in constructing personal identity. However, the above statements regarding imagination and memory were part of cross-examination of other issues such as personal identity, cause and effect etc. To discern when we really are remembering a past event or else are imagining that we remember it, we must distinguish memory from imagination. This is especially the case in those sections in the treatise where this issue is addressed most directly and explicitly.<sup>116</sup>

## **Impressions and Ideas**

As was mentioned above, Hume distinguishes between two mental events that are generated by our perceptions: impressions and ideas,<sup>117</sup> that is, sensations and images respectively. There is a great resemblance between them, but they are distinguished in reference to their degree of force.<sup>118</sup> While impressions are perceptions with a high degree of vividness and liveliness,<sup>119</sup>

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<sup>114</sup>“The idea of a substance as well as that of a mode, is nothing but a collection of Simple ideas, that are united by the imagination.” Book I, part I, sect VI. Of Modes and Substances.

<sup>115</sup>Book I, part I section IV. See also “A particular idea becomes general by being annexed to a general term; that is, to a term, which from a customary conjunction has a relation to many other particular ideas, and readily recalls them in the imagination.” Book I, part I, section VII. Of Abstract Ideas.

<sup>116</sup>Book I, part I, section III. Of the Ideas of the Memory and Imagination and Book I, Part III, section V, Of the Impressions of the Senses and Memory.

<sup>117</sup>There is inconsistency in Hume’s presentation of impressions and ideas: “It is even unclear whether impressions and ideas are not simply diverse aspect of perceptions, so that a perception counts as an impression if it is regarded as a present content of consciousness and an idea if deemed as representation of something distinct from it.”

Waxman, Wayne, pp.28 -31.

<sup>118</sup> In the beginning of the section “Of the Origin of our Ideas” Hume claims that impressions and images are so different that one can not confuse them except in few instances such as “In a sleep, in a fever, in madness, or in any very violent emotions of soul.” However, this claim is followed by another one which states that impressions and

ideas are ascribed with low-vividness and weakness.<sup>120</sup> By impressions, Hume encompasses sensations, feelings, passions, and emotions “as they make their first appearance in the soul.”<sup>121</sup> There are two kinds of impressions: original impressions and secondary impressions. Original impressions are impressions of sensation which depend on natural or physical causes<sup>122</sup> while secondary impressions are impressions of reflection. Hume ascribes all the senses and bodily pains and pleasures to impressions of sensation, while he ascribes passions and emotions to impressions of reflection. Impressions of reflection are derived either from impressions of sensation or from ideas. First we feel an original impression. Then, from that impression, we form an idea that gives rise to a reflective impression.<sup>123</sup> For example, we eat a rotten apple, then we have an idea of the disgusting taste. From that idea, a reflective impression of aversion to apples is derived.

By ideas, Hume refers to images that are representations and reflections of impressions in our thought and consciousness, or in other words, in memory and imagination.<sup>124</sup> Memory and imagination are two kinds of ideas and each of them is a copy of an antecedent impression. Ideas can be derived by copying impressions, or from other ideas which are themselves copies of impressions. Sensation that retains a high degree of its first vivacity becomes a memory but sensation that loses its original vivacity becomes imagination.

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images resemble each other in all the aspects except in their degree of force. Book I, part I, section I. Of the origin of our Ideas.

<sup>119</sup> For Hume’s notion of force and vivacity see, Trudy Govier, “Variation on Force and Vivacity in Hume,” *Philosophical Quarterly* 86, (1972): 44-52.

<sup>120</sup> See also *An Enquiry Concerning Human Understanding*, section II. Of the Origin of Ideas.

<sup>121</sup> *A Treatise of human Nature*, Book I, part I, sect I.

<sup>122</sup> There is no explanation how impressions of sensation are aroused by the external objects.

<sup>123</sup> Book II, part I, sect. I. Of pride and Humility.

<sup>124</sup> Ideas are mental representations which mediate between the objects and the mind.

## Two criteria for distinguishing memory from imagination

In the first book of the *A treatise of the Human nature*,<sup>125</sup> Hume raises two criteria for distinguishing ideas of memory from ideas of imagination. The first criterion deals with the difference in the degree of vividness regarding ideas of memory in comparison with those of imagination. Ideas of memory have more force and vividness than ideas of imagination, although not as much force and vividness as impressions.

“The faculty, by which we repeat our impressions in the first manner, is called the MEMORY, and the other the IMAGINATION. It is evident at first sight, that the ideas of the memory are much more lively and strong than those of the imagination, and that the former faculty paints its objects in more distinct colours, than any which are employed by the latter. When we remember any past event, the idea of it flows in upon the mind in a forcible manner;<sup>126</sup> whereas in the imagination the perception is faint and languid, and cannot without difficulty be preserved by the mind steady and uniform for any considerable time.”<sup>127</sup>

Both memory and imagination rely on perceptions. The difference is that memory maintains the impression vividly and firmly, while a perception in the imagination is retained very faintly or even fails to retain (as Hume terms it) “a perfect Idea.” An Idea appears in

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<sup>125</sup> Book I, part I, sect. III.

<sup>126</sup>In his critic on Hume’s account of memory, Pears raises the question whether Hume by strength and vivacity of the memory image refers to a *pictorial property*, that is, having a very clear and plain image, or does he intend a *behavioural property*, that is, the way in which an image enters the mind. See David Pears, *Hume’s System; An Examination of the First Book of his Treatise*, (Oxford: Oxford University Press, 1990), 44.

<sup>127</sup>*A Treatise of Human Nature*, Book I, part I, sect. III.

“Two different ways: either when in its new appearance it retains a considerable degree of its first vivacity, and is somewhat intermediate betwixt an impression and an idea: or when it entirely loses that vivacity, and is a perfect idea. The faculty, by which we repeat our impressions in the first manner, is called the MEMORY, and the other the IMAGINATION.”<sup>128</sup>

Ideas of memory have more specificity than ideas of imagination and are preserved steady and uniform over time, while ideas of the imagination are continually changing. These two features — the specificity and persistence over time—keep memory distinct from imagination.

While the first distinction between ideas of memory and ideas of imagination relates to degree of vividness, the second distinction relates to whether the original form and order of the experience is preserved. Both memories and imagination may correlate with their preceding impressions, though memory preserves the original form in which its objects were presented.<sup>129</sup> Imagination, in contrast, is not constrained to the same form and order of the original impressions, and has the liberty to confound, transpose, and change its ideas.

“yet the imagination is not restrained to the same order and form with the original impressions; while the memory is in a manner tied down in that respect, without any power of variation.”<sup>130</sup>

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<sup>128</sup>Book I, part I, sect III.

<sup>129</sup>“The chief exercise of the memory is to preserve the order and the position of events and objects were presented to it.” Book I, part I, sect. III.

<sup>130</sup> Ibid

Hume claims that imagination is not constrained by the original order and form of the impressions, though his wording does not state that imagination must change the order and form of impressions. That is, one can assume that imagination can either follow the form and order of the original impressions or change it.<sup>131</sup> If memory and imagination meet the same criterion and both can have the same form and order, does this undermine the difference between them?

### **The interrelation between memory and imagination**

#### **Imagination generates an idea of memory**

These two initial criteria are used to distinguish between memory and imagination, but the operation of the impressions and ideas and also their division to simple and complex creates more qualifications regarding the differences between them.

Even though impressions and ideas resemble each, with the only difference between them being the relative degree of vividness, Hume limits this generalization as well. Imagination and memory are also distinguished by the subdivision of perceptions. The perceptions appearing in impressions and ideas are divided into two groups: simple and complex. By simple perceptions, Hume means basic perceptions that are not composed from varied qualities (such as color, taste and smell) but from one quality which cannot be divided or separated. By simple idea, he refers to the color of the apple. By complex impressions or ideas, Hume means those perceptions which are composed from several qualities and can be divided into different parts. For instance, an apple can be divided to different qualities such as taste, color, and smell.

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<sup>131</sup> Oliver, A., Johnson, The Mind of David Hume: A Companion to Book I Of A Treatise of Human Nature, (Chicago: University of Illinois Press, 1995), 57.

The relation between simple impressions and their corresponding simple ideas is expressed by the dependence of the ideas on impressions. Hume maintains that simple ideas always follow impressions and resemble them. There is an exact correlation between them. No possibility to form an idea exists without having first the impression (e.g. perception) of the object. Those who did not experience a simple impression cannot have a simple idea of that phenomenon. One cannot hold an idea of the taste of pine-apple without having tasted it before. However, Hume recognizes that there are some exceptions. In some cases, simple ideas are not always derived from correspondent impressions.

In these exceptions to the basic rule for simple ideas, impressions are not always derived from correspondent impressions. Instead, they can be inferred from general or other related or contiguous ideas. One might form a simple idea without experiencing a corresponding simple impression. Hume gives an example of someone who is familiar with all the different shades of the color blue except for one shade. It is possible that this person will be able to deduce the missing color shade without perceiving it before with his senses. He will be able to do that by deducing the missing shade from comparing the gradation of all the other shades of the color blue. That is, by relying on the knowledge we have, we can deduce from other knowledge and complete a missing impression without encountering it first, all with the help of our imagination. Imagination seems to have the ability to produce simple ideas without relying on simple impressions, and we will take these simple impressions as corresponding to perceptions exactly as ideas correspond to the antecedent impressions. In this point, Hume actually exhibits the interrelation between memory and imagination. In simple knowledge, our imagination can provide some replacement to a deficiency i.e., imagination can create an image of something that was not experienced before and brings it as an idea of memory.



## Complex ideas

For Hume, the idea that imagination can create an impression never previously perceived is indeed an exception. This exception, however, might enable us to go further and examine whether some other relations exist which rely on the reversed relationship between impressions and ideas, a reversal which in the process entwines memory and imagination. While as a rule, simple ideas are derived from simple impressions, complex ideas do not necessarily rely directly on impressions and can be produced from other ideas. That is, many complex impressions are neither copied nor retained exactly in corresponding ideas, and never had preceding impressions that corresponded to them. In other words, we can imagine a complex idea without relying on perception but which is instead derived from our imagination. For an example, he gives an imagination of a New Jerusalem "whose pavement is gold and walls are rubies," even though no any impressions precede this imagination. Using this example, Hume illustrates how we form from simple ideas which we combine to a complex idea of the imagination. Imagination is the faculty which joins simple ideas together to form complex ideas in free arrangement of order and form. Although memory is distinguished from imagination in that the former follows the form and order of the original impressions, there are some qualifications for this statement as well. Impressions are not retained fully in complex ideas. This means that there is either doubt regarding the way our memories preserve the original impressions, or that very few of our complex ideas can be counted as memories.<sup>132</sup> It seems that we cannot form complex idea that will match precisely complex impressions. An example of this is the city of Paris. Hume cannot

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<sup>132</sup> Saul Traiger, "Hume on Memory and Imagination", in *A Companion to Hume*, (Oxford: Blackwell Publishing, 2008), 63.

form an idea of the city with all its houses and streets in the original proportion and formation as he has experienced it.<sup>133</sup> In other words, many details are lost when we form the corresponding ideas. The impressions are not reflected exactly in the mind. This example has a particular significance for the relation between memory and imagination since in the case of complex details, we cannot represent an exact reflection of our perceptions.

### **Reservations regarding the distinction between memory and imagination**

This contiguity of imagination and memory shows that there is no a real ability to distinguish between the two. Imagination is not constrained to the form and order of the presented perceptions, nevertheless memory fails to retain their complex detail. Not only is the causal dependence between impressions and ideas not maintained, thereby undermining the distinction between memory and imagination, but even the second criterion is insufficient to distinguish between ideas of memory and ideas of imagination. Hume is aware that we cannot provide evidence that an idea is an idea of memory. It is impossible to compare an idea of memory with the form and order of the past and to see whether its arrangement is indeed the same.

“When we search for the characteristic, which distinguishes the memory from the imagination, we must immediately perceive, that it cannot lie in the simple ideas it presents to us; since both these faculties borrow their simple ideas from the impressions, and can never go beyond these original perceptions. These faculties are as little distinguished from each other by the arrangement of their complex ideas. For though it be a peculiar property of the memory to preserve the original

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<sup>133</sup>Book I, part I, sect. I. Of the Origin of our Ideas.

order and position of its ideas, while the imagination transposes and changes them, as it pleases; yet this difference is not sufficient to distinguish them in their operation, or make us know the one from the other; it being impossible to recall the past impressions, in order to compare them with our present ideas, and see whether their arrangement be exactly similar. Since therefore the memory, is known, neither by the order of its complex ideas, nor the nature of its simple ones; it follows, that the difference betwixt it and the imagination lies in its superior force and vivacity. A man may indulge his fancy in feigning any past scene of adventures; nor would there be any possibility of distinguishing this from a remembrance of a like kind, were not the ideas of the imagination fainter and more obscure.”<sup>134</sup>

As a result of these reservations, Hume renounces his second criterion of maintaining form and temporal order and sticks to the first criterion, that is, the superior force and vivacity of memory over imagination.<sup>135</sup> However, relying solely on relative vivacity poses some problems. Vivacity as a criterion leads to a variety of epistemic errors as a result of the constant conjunction of memory and imagination. We can fail to recognize some ideas as memories or inversely some ideas as imaginations. We cannot really distinguish between real memories, merely apparent memories, and ideas of the imagination.<sup>136</sup> One can claim to be certain that he remembers something with a very high degree of vividness which is in fact an invention of the imagination.

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<sup>134</sup>Book I, part III, sect V.

<sup>135</sup>Starting with a seemingly minor claim, Johnson posits that Hume has two theories of memory: the original theory in Book I, Part I, Sect 3 and a revised theory in Book I, Part III, Sect. 5. Oliver A. Johnson, *The Mind of David Hume*, 62. See also Francis W. Dauer, *Hume Studies*, Volume XXIV, Number 2 (1998): 375-384.

<sup>136</sup>Traiger in his Article claims that “Hume thinks that we cannot always distinguish memories from other perceptions "in their operation." It is not clear that he thinks that there must be a sharp distinction at all, since the traditional epistemo- logical purpose for such a distinction, to partition the veridical from the non-veridical, is not obviously Hume's purpose.” Traiger, Saul, “Flage on Hume’s Account of Memory”, *Hume Studies* 12 (1985): 167.

Hume cannot distinguish between low vivacity memories from ideas of the imagination.<sup>137</sup>

Therefore the following questions are raised: would a highly vivid complex idea without the form and order of the original impression be considered a memory? Alternatively, would a low-vivacity complex idea with the form and order of original impression be counted as memory? When a memory's vivacity fades, does it thereby become imagination? Is an imagination a fainted memory?

Hume was aware of the possibility that we might confuse memories and imagination and that an idea of memory could mistakenly be taken as imagination, and alternatively imagination with vividness could be mistakenly taken as memory:

“And as an idea of the memory, by losing its force and vivacity, may degenerate to such a degree, as to be taken for an idea of the imagination; so on the other hand an idea of the imagination may acquire such a force and vivacity, as to pass for an idea of the memory, and counterfeit its effects on the belief and judgment.”<sup>138</sup>

By his argument in Book I part I section III which is given few pages back, Hume claims that imagination and memory rely on the same impressions but that an idea of imagination is an idea that lost its vivacity and, as a result, became an imagination. There he does not relate to the degenerated idea as a fake, but instead as the way imagination operates.

“And as an idea of the memory, by losing its force and vivacity, may degenerate to such a degree, as to be taken for an idea of the imagination.”<sup>139</sup>

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<sup>137</sup>Johnson, Oliver, “Lively Memory and Past memory”, *Hume studies* 13 (1987): 343-359.

<sup>138</sup>Book I, part III, sect. V.

<sup>139</sup>Book I, part III, sect. V.

Relative vividness was a criterion which was related to memory. If Hume discarded the second criterion and was left with the first one (the relative force and vividness), memory and imagination have to be clearly distinguished. However, from the former quotation it is assumed that a transformation between memory and imagination cannot take place. Memory cannot degenerate to become idea of imagination and imagination cannot be revived to the degree of being memory. If we would mistake a memory for an idea of imagination or vice versa, our belief and judgment would be false. It is also thought that memory can have several degrees of force. When memory loses its vividness, it can only mislead us towards thinking that it is imagination when it is still memory with low vividness. From this quotation it seems that Hume refutes his own criterion which claims that as long as an idea has high vividness it is memory and when it loses its vividness it becomes imagination. We cannot apply the second criterion nor can we apply the first one since it is impossible to distinguish ideas of memories from ideas of imaginations because both of them either have high or low vividness. Therefore, vividness must be discarded as distinguishing feature as well.

Nonetheless, Hume continues this quotation immediately with a reservation which enables him to stick to his first criterion by ascribing the confusion between memory and imagination to liars:

“This is noted in the case of liars; who by the frequent repetition of their lies, come at last to believe and remember them, as realities; custom and habit having in this case, as in many others, the same influence on the mind as nature, and infixing the idea with equal force and vigour.”<sup>140</sup>

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<sup>140</sup>Book I, Part III, Sect V.

Liars consolidate their imagination into memories by frequent repetition of their lies. By this repetition their lies become reality. If so, what is the state of liars' reality if they believe and remember their lies as memories? Hume is not willing to accept that this state is a frequent occurrence which happens as a natural interrelation between imagination and memory. However, while he ascribes false memories to liars, he does not refute or try to solve the confusion in the case where memories lose their vivacity and are mistakenly taken as imaginations. Since the epistemological evidence for distinguishing memories from imagination is misleading, Hume attaches this difference of force and vividness to belief and feeling.

“Thus it appears, that the belief or assent, which always attends the memory and senses, is nothing but the vivacity of those perceptions they present; and that this alone distinguishes them from the imagination. To believe is in this case to feel an immediate impression of the senses, or a repetition of that impression in the memory.”<sup>141</sup>

Or:

“Since, therefore, the imagination can represent all the same objects that the memory can offer to us, and since those faculties are only distinguished by the different feeling of the ideas they present, it may be proper to consider what is the nature of that feeling. And here I believe every one will readily agree with me, that the ideas of the memory are more strong and lively than those of the fancy.”<sup>142</sup>

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<sup>141</sup>Ibid

<sup>142</sup>Ibid

Is the connection of a certain belief to our memory sufficient to distinguish memory from imagination? As we saw, Hume also ascribes belief to the liars “who by the frequent repetition of their lies, come at last **to believe** and remember them, as realities.” Can we claim that the liar is not liar anymore and that his lies are true memories since he believes in them? The distinction between what someone really remembers, and what he only seems to remember — in other words, the distinction between memory and imagination — would collapse.

In order to overcome the difficulty in distinguishing memory and imagination, Oliver suggests renouncing our ordinary concept of memory and breaking the tie between memory and the real past. An idea of memory should be regarded as an idea of the present since we cannot verify that it replicates the past.<sup>143</sup> However, in this solution, we can distinguish memory and imagination only from our belief. It does not really matter if a memory was indeed the real past or not; what does matter is whether we believe it to be part of the real past. We do not speak about the past, but only about what we believe.<sup>144</sup> Indeed, even if most of the time our feelings and beliefs are correct, they do not provide us an epistemological device to verify them. One cannot apply feeling as epistemological device to distinguish memory from imagination.

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<sup>143</sup>“It follows that, because a necessary condition for our having knowledge of the past cannot be fulfilled within Hume's epistemology, we can have no such knowledge. Therefore, we must drop the concept of the past, as it is ordinarily understood as something that once existed, from our account of memory. 'Past' memory must be abandoned in favor of 'present' memory, which in Hume's theory is equivalent to 'lively' memory..... The only reason it appears to be a problem lies in our assumption that, to remember the event, the individual's memory-idea must replicate what actually occurred. i.e., 'the past.' Once this assumption is dropped we no longer face a dilemma. If the person has a lively idea of the event as being of a certain nature, then he remembers it in that way; if, later, he has a lively idea of its having been of a different nature, then he remembers it in that at way. Both are equally cases of remembering, and that is the end of the matter.” Oliver, Johnson, “‘Lively’ Memory and ‘Past’ Memory,” in *Hume Studies* Volume 13, Number 2, (1987): 353.

<sup>144</sup> Oliver, Johnson, “‘Lively’ Memory and ‘Past’ Memory,” 354 – 355.

## **The Husserlian phenomenological epistemology of time-consciousness, perception, memory and imagination**

### **Introduction**

In the following chapter I will discuss memory and phantasy in Husserl's phenomenology. These issues were primarily investigated in two books which contain lectures course he gave in the winter semester of 1904-05. The first book, *Zur Phänomenologie des inneren Zeitbewusstseins (1893-1917)*<sup>145</sup> deals with the phenomenology of our consciousness of internal time and mainly addresses the phenomena of perception and memory in relation to time. The second book *Phantasie, Bildbewußtsein, Erinnerung: Zur Phänomenologie der anschaulichen Vergegenwärtigungen, Texte aus dem Nachlaß (1898-1925)*<sup>146</sup> mainly deals with the phenomenology of phantasy. These acts of apprehension are all related to and constitute the main division of consciousness into two types: presentation and re-presentation. In order to understand the interrelation and distinction between these modes of apprehension, I will refer first to Husserl's general phenomenological approach which determines his investigation of these modes of consciousness, then I proceed into the way memory and phantasy are constituted.

### **Negating descriptive attributes**

British Empiricists describe the differences between perception, memory, and imagination with reference to their differing origins. These differences entail further distinctions of perception and memory (such as greater vivacity, intensity, stability, steadiness, etc.), in contrast to the protean,

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<sup>145</sup> Edmund Husserl, *On the Phenomenology of the Consciousness of Internal Time (1893-1917)*, ed Rudolf Bernet, Volume IV, (Dordrecht: Kluwer Academic Publisher, 1991). [*PITC/ Hu X*](here and after PITC)]. All references in this chapter cite the pagination of the English translations.

<sup>146</sup> Edmund Husserl, *Phantasy, Image Consciousness and Memory (1898- 1925)*, Trans: John B. Brough, (Dordrecht: Springer, 2005). [*PBE/ Hu XXIII*].



volatility and the voluntarily characteristics of imagination.<sup>147</sup> However, these descriptive distinctions between perception, memory, and imagination are relative and not essential. Husserl maintains that distinctions between modes of consciousness cannot be made with reference to descriptive attributes of their content because this would lead to a gradual distinction that cannot be ground for an essential characteristic.<sup>148</sup> Defining a mode of consciousness with descriptive attributes cannot clearly distinguish between modes in cases when features of one act of consciousness approaches and resembles a different mode. For example, when the vivacity of imagination is strong or even stronger than that of memory, the descriptive distinction between the two is ambiguous. The resemblance of phantasy presentation to its corresponding perception requires more essential distinctions, rather than relative ones such as vivacity. In fact, Husserl does not rule out completely the significance of these descriptive features described by the empiricists and even considers some of them as having phenomenological significance (such as stability vs. instability, fullness vs. vagueness or continuity vs. discontinuity). Nevertheless, he claims that these relative qualities cannot be the ground for an essential distinction and that the phenomenological approach has a different reference point. For Husserl, the reference point for establishing the distinction between memory and imagination is the act of presenting the object in consciousness, and its relation to its object. While the empiricists, as Husserl claims, investigate the quality of the object's content, he investigates apprehensional modes, the acts of consciousness and their relation to the content (the object).

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<sup>147</sup> See the chapters that deal with the British empiricists.

<sup>148</sup> PBE, 12-15.

## Rejection of the psychologism and the natural science

Husserl's rejection of the empiricists' descriptive distinctions is part of his general rejection of psychology.<sup>149</sup> For the empiricists, it is psychology that provides the foundation for knowledge and epistemology. Indeed, in his early stage, Husserl shared this viewpoint. He claimed that the essential theoretical foundations of logic lie in psychology. He saw logic as either a branch or constituent that derived from psychology. However, his investigation leads him to refute the idea that psychology<sup>150</sup> can provide the theoretical basis for logic and cognition, a foundation for knowledge,<sup>151</sup> but instead to believe in non-empirical validity. Husserl maintains that the real psychological acts of knowing cannot provide us with a priori knowledge. Validity cannot depend on the act of knowing but is a priori. It is logic which leads to certainty by investigating ideal structures and the laws of consciousness. Pure logical laws are established "by apodeitic inner evidence"<sup>152</sup> and provide a priori validity.

In contrast, psychology, as Husserl defines it, is "a science of experience,"<sup>153</sup> a science of facts and real events. He writes:

"...psychology is a factual and therefore an empirical science....psychology  
has so far lacked genuine and therefore exact laws and that the propositions in

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<sup>149</sup> On the refutation of Psychologism see, Marvin, Farber, *The Foundation of Phenomenology*, (Frankfurt: Ontos Verlag, 2006), 99-136. See also J. N. Mohanty, *The philosophy of Edmund Husserl: A Historical Development*, (New Haven; Yale University Press), 2008, 62-72. Joseph, J. Kockelmans, *A first introduction to Husserl's Phenomenology*, (Louvain: Duquesene, 1967), 9-20.

<sup>150</sup> Husserl's phenomenology went through some shifts. After being criticized by Frege, who claimed that pure logic cannot be based on psychological acts, Husserl internalized this critic and abandoned psychology. See Marvin, Farber, *The Foundation of Phenomenology*, 98. See also Dermot Moran, *Edmund Husserl: Founder of Phenomenology*, (Cambridge: Polite Press, 2005), 80-86. J. N. Mohanty, "Husserl and Frege: A New Look at Their Relationship", in *Husserl Intentionality and Cognitive Science*, Ed. Hubert L. Dreyfus, (Massachusetts: The MIT Press, 1982), 43- 56.

<sup>151</sup> Edmund Husserl, *Logical Investigation*, Vol 1, Trans: J.N. Findlay, (London: Routledge & Kegan Paul, 1976), 98. *Logische Untersuchungen, Erste Band, Prolegomena zur reinen Logik*, Ed. Elmar Holenstein, (The Hague: Martinus Nijhoff, 1975). Hereinafter the abbreviation will be used is LI.

<sup>152</sup> LI, I, 98 -99.

<sup>153</sup> Edmund Husserl, *Ideas: A General Introduction to Pure Phenomenology*, Trans: W. R Boyce Gibson, (London: George Allen, 1952), 43. *Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie*. [Id/Hu III] Hereinafter the abbreviation will be Id.

it which are dignified with the name of laws are merely vague, even if valuable, generalization from experience.”<sup>154</sup>

Because psychology investigates the factual nature of consciousness and not its a priori laws, it cannot establish a correlation between cognition and its object and overcome skepticism. Neither can natural science, which is established by induction from singular facts of experience, establish or validate laws, but only probability.<sup>155</sup> Husserl’s primary concern was to create a foundation for pure logic and epistemology which would be independent of psychical activities. He wants to constitute the objective conditions and principles for the a priori foundation of knowledge and the ideal structures of consciousness in their different modes. Yet, although Husserl resists empiricism and natural science, he still has a common ground with them. Both empiricism and phenomenology take their theory of knowledge from lived experiences; however, the epistemological goals of phenomenology are pursued differently than those of the empiricists. Phenomenology investigates primordial forms of experience, the ideal structures of consciousness. It is the constitution of acts of consciousness, a system which establishes the structure of a priori categories of meaning,<sup>156</sup> conscious acts, and their relation to objects. Husserl looks at the a priori structures of all conscious experiences. In contrast to empiricists who validate a phenomenon by leaning on factual reality, Husserl is interested in the essence of the phenomenon. This is an epistemological shift from investigating the world of realities to exploring its ultimate presuppositions, a turn from the factual experience to experience in ideality, independent from any possible factual reference.<sup>157</sup>

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<sup>154</sup> LI, I, 98.

<sup>155</sup> LI, I, 98 -99.

<sup>156</sup> On the constitution of meaning, see Robert Sokolowski, *The Formation of Husserl’s Concept of constitution*, (the Hague: Martinus Nijhoff, 1964), 53-54.

<sup>157</sup> Sokolowski, *The Formation of Husserl’s Concept of constitution*, 116- 120.

### **Phenomenological reduction: suspension of reality**

This shift from psychology and natural science to phenomenology entails a change of attitude toward reality, a different ontological assumption. Phenomenology is concerned with reality as it appears in consciousness. Husserl maintains that phenomenology should not deal “with real but with transcendently reduced phenomena.”<sup>158</sup> He is not interested in examining the existence of real world. Instead, he defines reality in terms of appearances. He distinguishes between reality and the way we grasp it, maintaining that we cannot grasp reality as it is since actual things and events are beyond our reach and knowledge. The thing-in-itself does not belong to experience or to apprehension and therefore consciousness cannot know the thing-in-itself. Instead, the thing-in-itself belongs to metaphysical reflection. Phenomenological analysis cannot lead to the objective world of actual things and events but relates to reality from a different perspective, that of reality intended, intuited, represented, and phantasied in our consciousness. Husserl does not deny the existence of physical objects or an external reality. He does not commit himself to Berkley’s idealism, but he does suspend any presumptions regarding actual reality (Epoché).<sup>159</sup> He brackets empirical- real existence as a transcendental,<sup>160</sup> metaphysical question and excludes it from his epistemological investigation. The phenomenological reduction is the bracketing that which concerns the real world in its empirical reality.<sup>161</sup>

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<sup>158</sup> Ideas, I, 44.

<sup>159</sup> On Epoché see, Dan Zahavi, *Husserl’s Phenomenology*, (Stanford: Stanford University Press, 2003). 43- 46. See also Charles, W., Harvey, *Husserl’s Phenomenology and the Foundation of Natural Science*, (Ohio: Ohio University Press, 1989), 97-145.

<sup>160</sup> PITS, 4.

<sup>161</sup> Rodulf Bernet, Iso Kern, Eduard Marbach, *An Introduction to Husserlian Phenomenology*, (Illinois: Northwestern University Press, 1993), 58-87.

## Essence

Husserl initiates a shift from psychology which deals with the existence of the real world to the essence which he calls the eidetic reduction. By eidetic reduction, Husserl means the essential properties that are to be distinguished from the accidental properties of an object. In other words, the eidetic reduction focuses on the invariant structure that makes up an object's essence.

Essence discloses itself in phenomenon, in the appearance. The shift from the empirical perspective to the phenomenological perspective takes place by the transformation from empirical intuition to essential intuition,<sup>162</sup> by relating to the essence of the object instead of the quality of the object.<sup>163</sup> In other words, pure essence is not enclosed by empirical examination, but rather by an investigation of the a priori ideality, a priori structure of consciousness which is to be known intuitively. Phenomenology is the investigation of primordial forms of experience, the ideal structures of consciousness. Husserl strives to establish a priori principles of each structural component of consciousness. He is interested in the condition of knowing, that is the fundamental principles that constitute knowledge, modes of appearance, “the *pure phenomenology of the experiences of thinking and knowing*.”<sup>164</sup> Phenomenology concerns the way in which we are conscious of the world through meaning, essence, eidetic, idealization rather than empirical investigation of particular existence. He looks to analyze various kinds of thinking, modes of intuitive consciousness, such as perceiving, remembering, imagining, etc. Phenomenology seeks the essence of the givenness, of what appears to our consciousness when we perceive, think, imagine, or recall.

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<sup>162</sup> Ideas I, Section 3, 54.

<sup>163</sup> David, Wood, *The Deconstruction of Time*, (Humanities Press International, Inc. Atlantic Highlights, 1989), 43.

<sup>164</sup> LI, vol 1, 249.

## **Act and object**

The phenomenological attempt to clarify the essential structures of consciousness takes place in the analysis of the correlation between the acts of consciousness and objects. In this analysis, Husserl also looks at the a priori structures of these acts. The a priori structures of conscious acts are experienced from the first-person point of view, the way the subject experiences objects.

Husserl claims that one of the mistakes that psychology makes is not to distinguish between an act of consciousness and the object, an act of knowing and the object of knowledge.

Psychologists pay attention only to the content of the object and overlook the act itself. Ignoring the act is overlooking the difference between the object as experienced and the object as it appears. Husserl maintains that almost all the features that we ascribed to an object of perception can also be applied to the object of phantasy as well. An object can be perceived and imagined in the same way, from the same perspective, illumination, etc. Therefore, the apprehensional characteristics are responsible for determination of the object as it appears in consciousness.

What distinguishes the givenness of one object from another are the modes of apprehension and their characteristic of meaning.<sup>165</sup> The content of apprehension is determined by the way the act intends the object.

## **Intentionality**

The intrinsic feature of consciousness that distinguishes the act from the object is intentionality.

By intentionality, Husserl means that consciousness is intentionally directed toward an object.

Husserl writes:

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<sup>165</sup> PBE, 17.

“essential intuition is the consciousness of something, of an object, a something towards which its glance is directed.”<sup>166</sup>

Husserl was interested in the essence of intentionality in order to define the relation between the act of knowing and the object. There are different types of consciousness and every conscious act possesses an intentional content, from the constitution of actual presentation to non-existent presentation. Apprehensions such as perception, phantasm, and memory are all kinds of intuitions and each has a distinct eidetic characteristic. While perception intends an existing object, imagination intends an un-existing object. Intentional acts take place regardless of whether the objects exist or not. The essence resides in the intentional act of consciousness, an act of apprehension as a mode of objectivation.<sup>167</sup> By objectivation, Husserl means the directness of the act, be it perception, phantasy or memory, toward an object and the determination of the object, by that directedness. The difference, for example, between memory and imagination lies in the different kind of objectivation; each act exerts different objectivation. The act of objectivation is the act of creating meaning, apprehending the object in a certain way. Husserl specifies two aspects of intentionality: quality and matter. Quality signifies the way an act is intended, be it perceiving, imagining, recalling and so on. Intentional matter signifies the intentional object, be it a table or a chair.<sup>168</sup> In a case where the same object is intended by different conscious act, the intentionality of that object is not changed, but only its mode of givenness, that is, the way it is intended, its mode of apprehension. The modification of the object is by its mode of givenness, the mode of consciousness, be it memory, imagination or perception.

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<sup>166</sup> Ideas, I, 55.

<sup>167</sup> PBE, 7.

<sup>168</sup> LI, vol 4, 586 -590.

### **Presentation and representation: the constitution of the flow of internal time-consciousness**

In accordance with his whole theory, Husserl's analysis of time-consciousness excludes all the assumptions with respect to objective and actual time. In order to investigate the structure of time-consciousness and to constitute the validity of time, it is necessary to suspend naïve beliefs regarding the nature of objective time. Husserl writes,

“Inherent in this, as in any phenomenological analysis, is the complete exclusion of every assumption, stipulation, and conviction with respect to objective time (the complete exclusion of all transcending presuppositions concerning what exists).”<sup>169</sup>

Or

“what we accept, however, is not the existence of a world time, the existence of physical duration, and the like, but appearing time, appearing duration, as appearing. ... To be sure, we do assume an existing time in this case, but the time we assume is the immanent time of the flow of consciousness, not the time of the experienced world.”<sup>170</sup>

Husserl suspends all assumptions about objective time and describes time as it is experienced immanently in consciousness. His “analysis of time-consciousness, of the temporal character of the objects of perception, memory and expectation”<sup>171</sup> is not a study of the actual time of the experienced world rather “*the immanent time* of the flow of consciousness.”<sup>172</sup> The internal time-

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<sup>169</sup> PITC 4.

<sup>170</sup> PITC, 5.

<sup>171</sup> PITC, 5.

<sup>172</sup> PITC, 5.



consciousness is constituted by two different modes: 1) immediate presentation (Gegenwärtigung); and 2) reproduction or representation (Vergegenwärtigung). In the first mode, Husserl binds the immediate past (retention or primary memory) and the immediate future (protention) to perception;<sup>173</sup> the second mode is representation (reproduction). Within representation, Husserl includes recollection (secondary memory),<sup>174</sup> phantasy and expectation. Husserl maintains that every constituted experience is either presentation or representation (reproduction). These two modes of appearance constitute temporality. In both cases, the object is immanently present.<sup>175</sup> The phenomenological difference between presentation and representation generates an alliance between retention, perception and protention on the one hand and between recollection, imagination and expectation on the other hand. While retention and perception are affiliated and are originary modes of consciousness (in both, a lived experience is involved), imagination, recollection and expectation are kinds of representation, reproductive modifications which share some of their features but are not tied to each other as the modes of presentation. The modification of consciousness from primary impressions and retention into secondary memory and phantasy is the transition from originary to what is reproduced. The acts differentiate in their intentional essence. Each act yields different content. Acts of presentation constitute the immanent content and acts of representation are those that represent or reproduce this immanent content. In what follows, I will try to demonstrate how the

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<sup>173</sup> Protention is a parallel notion to retention but signifies what is about to happen. Expectation is the parallel to secondary memory. However I am not going to deal with both protention and expectation even though the function of memory is involved in absorbing anticipatory awareness. For deliberation on the relation between memory and expectation, see Wood, *The Deconstruction of Time*, 85-91.

<sup>174</sup> From now I will use retention for primary memory and recollection for second memory in order to avoid wordiness.

<sup>175</sup> PITC, 93.

constitutions of different types of apprehensions like perception, memory and phantasy take place.

### **Temporal determination of the immediate presentation: perception and primary memory**

Husserl distinguishes between the various modes of givenness, the different ways to intend an object. These varieties of ways to intend an object are related to each other and they are hierarchically ordered. The type of givenness and the directness or originality of the intended object determines the hierarchy. This ranking also establishes the level of epistemology of the intentional essence. Perception is ranked highest in the epistemological level, since its objects are given in their most directness. Like the British empiricists, who designate perception as the beginning point of all other states, Husserl maintains “a priori necessity of precedence of a perception or a prima impression.”<sup>176</sup> The now-phase of the object is called by Husserl primary impressions. Primal impressions constitute the immanent content and are the source of all other kinds of consciousness such as recalling, imagining, believing, doubting, desiring, and so forth. The primal impression is consciousness of what now exists as present ‘in person’. We have a direct acquaintance with the object. Its form is unmodified and always new with each present moment. Husserl characterizes perception

“as an act in which something objective appears to us in its own person, as it were, as present itself.”<sup>177</sup>

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<sup>176</sup> PITC, 55.

<sup>177</sup> PBE, 18.

However, the now is in perpetual movement. Every actually-present now of consciousness is subject to modification, of continuously sinking into the past. There is a continuous flux, continual passing over of the content from impression into retention. A primal impression passes over into retention as new impressions arise. By retention, Husserl means the immediate perceptions which have been pushed back, phases of duration which are still adjacent to the present moment. The intuition in retention is intended as what has just been. Retention is not reproductive and does not involve images or signs. Rather, like perception it is a mode of direct awareness of the self-given. The preceding perceptions are not erased from consciousness but are fused in the apprehension of the present perception. Retention is not temporally removed with respect to primal impressions; it is united with the primal sensations and has the mode of what has just elapsed, of the immediate past. The mode of the now is attached to the mode of the immediately past. The attachment between perception and retention is to such extent that retention always clings to present sensations. In each perceptual moment, there is the now that endures, the just-elapsed moment that sinks to the past, and the new moment which follows the now. This process has a sense of a running-off mode that is a state in which perpetual change takes place continuously. This continuity forms an inseparable unity whose parts cannot exist by themselves; the parts can only exist in the whole process of running-off. That is, retention is not separated from perception and perception is not separated from protention.<sup>178</sup> Retention is bound to perception however its mode is of a continuity of running-off. It is in a perpetual process of sinking further and further.

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<sup>178</sup> PITC, 89.

“The impressional consciousness, constantly flowing, passes over into ever new retentional consciousness... thus a continuity of retentional modification attaches itself to each of these retentions.”<sup>179</sup>

Retention changes into retention of retention and so on. The primal impressions shift into retention, and this retention of the primal impressions shifts again into retention of retention.

“Each later retention is not only continual modification that has arisen from primal impression; each is also continuous modification of all earlier continuous modification of that same initial point.”<sup>180</sup>

Retention attaches itself to impressions, to the actual now “as a comet’s tail that attaches itself to the perception of the moment”<sup>181</sup> In receding into the past, the impressions in retention undergo a weakening in intensity and become obscure and empty.<sup>182</sup>

In the continuous transition of primal impression into primary memory, the proximity between these two modes is somewhat relative. Since past, present and future are constituted in continuity, how can we distinguish between perceptual and retentional consciousness?

Husserl maintains that perception can be defined in two different ways: either as extended or as condensed.<sup>183</sup> In its extended form, perception grasps the whole process of the temporal act, the continuum of unity.<sup>184</sup> Perception, in this case, encompasses the elapsed retention, the now point, and protention (the immediate coming future). For example, in the case of a melody, the whole

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<sup>179</sup> PITC, 31.

<sup>180</sup> PITC, 31.

<sup>181</sup> PITC, 37.

<sup>182</sup> PITC, 27.

<sup>183</sup> PITC, 40- 42. See also David Wood, p.97. And Toine Kortooms, *Phenomenology of Time: Edmund Husserl’s Analysis of Time-consciousness*, (London: Kluwer Academic Publishers, 2002), 64-66.

<sup>184</sup> PITC, 39.

melody is defined as now in the extended form of perception. In its narrow sense, perception is the now-point without the retentional and protentional phases that attached to it. In that case, the melody is not the now-point. Rather the now-point would be the perceptual consciousness of a single tone (though it still resonates the preceding ones). The preceding tones are attached to the current tone. The current single tone is the now and the tones that have passed away are retention. Whether the scope of perception is extended and includes retention and protention, or whether retention and protention are distinguished from primal impression, they are all immediate and original modes of consciousness. The distinction between primal impressions and retentions depends upon the kind of the intentionality generated through the act of meaning. If the intentional act is directed toward the whole temporal process then perception includes retention and protention. However, if the intentional act of meaning is directed toward a single phase of this process, then perception is a single now-point. The difference, then, between primal impression and retention is the difference between what we immediately see now and what we have just been seen. While impressional consciousness is a now directed toward the now, retentional consciousness is a now that is directed toward what has just been sensed. The essence of perception is to bring the now to intuition and the essence of primary memory is to bring the just past to intuition, it is a direct intuition to the past. When primal impression recedes toward retention, it does not lose its intention. Its objectivity is not changed, but its givenness and relation to time has changed.

### **Reproductive representational consciousness**

### **Representation as opposed to perception**

The fundamental distinction is between presentation and representation. This distinction depends upon the characterization of consciousness. In perception not only do we encounter the object standing before us as present and existing but also ‘in person.’ In contrast, the object in re-presentation is given as presently existing but absent from the perceptual field, the object is not bodily present.<sup>185</sup> Reproductive re-presentations characterize memory, expectation, phantasy, and image consciousness (the image object).<sup>186</sup> All these reproductive conscious apprehensions have an essentially common aspect. They are re-presentational modifications of original impressions obtained through perceiving objects. Representation presupposes a consciousness that was intended impressionally but yet stands in opposition to perception.<sup>187</sup> In the following, I will refer only to two forms of representation: memory and phantasy. Though expectation has a role in memory and it is quite interesting to see the way expectation and memory are interwoven,<sup>188</sup> my analysis here excludes expectation. There are two reasons for this exclusion. First, Husserl himself does not elaborate his ideas on expectation, and second, the subject of this chapter concentrates on memory and phantasy and their interrelation. Image consciousness will be dealt, however, only as long as it relates to phantasy.

Neither recollection nor phantasy presents their object as actually there in person. Both of them do not carry the consciousness of being present.<sup>189</sup> Rather, they deal with what is absent.

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<sup>185</sup> Image consciousness is exceptional since it is embedded in a physical object.

<sup>186</sup> Image consciousness is a mode of apprehension, for example, when one looks at photography, painting, and imagining art. I will address this issue later.

<sup>187</sup> However, there are some experiences in which the appearances of phantasy are not different from perceptual experiences such as in hallucination, vision, and dreams including daydreaming. See PBE, 45.

<sup>188</sup> Recollection represents the re-fulfillment again of the expectation. Its horizon is directed toward the past but also toward the future of what is recollected. It is the ability to retrospect, to review the past in the light of the results. The meaning of the past is determined on the basis of fulfillment of possibilities that were not realized or fulfilled. For example such as judgments that arise retrospectively. Recollection therefore brings about the interaction between the original expectation as recollected and the continual process of recollection. PITC, 55.

<sup>189</sup> PBE, 72.

The act of representation is characterized by a double intentionality; it represents not only the remembered or phantasied object but also the remembered and phantasied act. An act is reproduced and an object is represented. Both memory and phantasy possess two objects: (1) the image that appears; and (2) the subject of the image which does not appear.<sup>190</sup> Representation is directed toward the represented subject in the image and not toward the image itself.<sup>191</sup> In other words, the act of meaning, the objectivating intention aims at the image subject.

### **Husserl's fluctuation image theory<sup>192</sup>**

While Husserl challenges the image theory regarding presentation since perceptions, retention, and protention present themselves directly and are present in person, for the constitution of re-presentation such as secondary memory, and phantasy, he shifts from accepting the image theory to denying it. Husserl in an early phase did embrace the image theory.<sup>193</sup> He initially tried to define memory and phantasy-consciousness in terms of image theory, as forms of pictorial consciousness. The need for image is the supposition that there is a need of something present to fill in for something that is absent in the mode of as-it-were or as-if. Later, however, Husserl rejects his initial reduction of phantasy and memory to forms of image-consciousness. He instead claims that phantasy and memory are direct experiences of their objects. The content of the absent object, which features memory and phantasy, does not depend on mediation of an image. By ruling out image mediation, Husserl posits instead the direct reproduction of the acts that intend those objects. Husserl defines memory and phantasy as forms of reproduction in a sense of modified consciousness in which there is a direct awareness of their

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<sup>190</sup> PBE, 69.

<sup>191</sup> This is not the case in aesthetic object. The aesthetic object is an exception since the intuition is directed toward the image itself, the image and the subject are not separated; they are the same thing. PBE, 39 -40. I will come back to this point later when discussing the image object.

<sup>192</sup> PITC, 185-192.

<sup>193</sup> In his lectures up to 1905.

objects. The object hovers before me in representation not through an image but through identity,<sup>194</sup> the object endures through the changes and transformations in subjectivity.

### **Differences between recollection and phantasy**

Recollection and phantasy are both representational modifications that stand in opposition to perception and retention. Husserl distinguishes representational modification from the original consciousness of the present and past. However, even though he defines both recollection and phantasy in terms of representational modification, he differentiates between them. The questions to be asked are: what are the particular characteristics that distinguish these different types of reproduction? How can one distinguish the modified character of phantasy-consciousness from the modified consciousness of the past in the form of recollection? What kinds of modification apply to phantasy-consciousness or to recollection?

Husserl distinguishes between the mere phantasy of the ‘temporal extended object’ and recollection. Memory deals with what has been, while phantasy with what might have been. When applied to phantasy, modification means not actual or not related to what is actual. In mere phantasy, there is no reproduction of a now, nor a coincidence of the now with a past that was once given. We have an awareness that what we see in phantasy we do not posit as actual. However, in recollection, we have a reproduction of an earlier perception; a consciousness of having been perceived. Recollection aims toward a past which has actually been and therefore endows the object with an awareness of this past. Memory is the representation of something of the past. It is not simply the consciousness of a past object but consciousness of the object as it has been perceived. Perception presents an object from a specific way, for example, from one

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<sup>194</sup> PITC, 190.



side, in a certain illumination. Memory follows the specific way in which the object originally appeared in perception. In phantasy, the reproduction of a possible perception is the crucial determinant, it is the act of as-if, while in memory, the defining feature is the act of the reproducing the once experienced object. Memory and phantasy are both representational modifications that are opposed to perception. However, in one aspect, memory and perception are allied and stand in opposition to phantasy. All apprehensional modes intend a transcendent object, yet the referent in perception and memory is distinguished from the referent in phantasy. Whereas in perception and memory, a referent exists, in imagination the referent does not exist. Imagination intends a transcendent object which does not externally exist, yet the act of imagination still contains a reference toward a transcendent object, but toward a non-existing object. The differences and resemblances between memory and phantasy have not yet been exhausted and I will elaborate them in the following pages.

### **Secondary memory – recollection of the present**

#### **Memory and time determination: retention and recollection, “the not now in the now”**

The analysis of memory and its constitution is related to time determination.<sup>195</sup> Time and memory are interrelated concepts; their existence is interwoven. The constitution of time depends on the particular kind of intentionality of memory (be it retention or recollection), and in its relation to perception. Memory and perception are distinguished and defined in terms of distance from the original perceived object. Without the distance inherent in the distinction between memory and perception, there would be no difference between the past and the present.

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<sup>195</sup> John B. Brough, Husserl On Memory, *The Monist*, Vol, 59, No. 1 *The Philosophy of Husserl*, January 1975, pp. 40-62.

Through this temporal distance, the act of the present is distinguished from the object as it stands in perception. Husserl asks,

“Now what determines the difference between the original consciousness of time, in which the past is experienced in relation to the now, and the *reproductive* consciousness of time? In other words, what distinguishes time-consciousness in the ‘perception’ of an event or duration from the time-consciousness in a memory of something further past?”<sup>196</sup>

Husserl maintains that a strong phenomenological opposition exists between re-presenting recollection and retention. Recollection and retention are distinguished by the different extension, temporal position and by different dimensions of consciousness extension. Retention belongs to the absolute time-constituting flow of consciousness, while recollection is constituted by this absolute time-constituting flow.<sup>197</sup> Time-constituting consciousness is the flow of successive moments from the actual present, to what has elapsed, and to those future moments that have not happened yet. Retention is linked to present perceptions, either during the perceptual flow, or after it elapses in a continuous union. It depends on primary impressions and holds in consciousness what has just past. It is an extension of the now-consciousness, and intends the immediate past. It is a part of a process that is constantly and continuously coming into being. In contrast to retention, recollections “reach into the distant horizon of retention,”<sup>198</sup> and intend the whole elapsed event or object. It is an intentional act that is directed towards a completed past occurrence when retention of that occurrence is over. Recollection is an

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<sup>196</sup> PITC, 185.

<sup>197</sup> Brough, Husserl On Memory, 45.

<sup>198</sup> Edmund Husserl, *Analyses Concerning Passive and Active Synthesis: Lectures on Transcendental Logic*, Trans: Anthony J. Steinbock, (Dordrecht: Kluwer Academic Publications, 2001), 157. [Analysen zur passiven Synthesis] [APS / Hu XI].

independent phase that repeats the temporal horizon of the experienced object and its succession. It reconstructs the whole flux of what has been experienced: the phases of retention, primal impressions and protention. The process of recollection is

“re-presentational modification of the perceptual process with all of the latter’s phases and stages right down to and including the retentions: but everything has the index of reproductive modification.”<sup>199</sup>

It is responsible for the successive flow of experience following the determinate order of retention. The object is modified in representation in the sense that it does not appear as present but as having once been present, the “representation of something that presently exists but absent.”<sup>200</sup>

There is also a difference between retention and recollection in terms of evidence. While in retention everything is “absolutely certain”<sup>201</sup> and understood as it was experienced (there are no mistakes), in recollection the reproduced past is liable to deviation from the original experience and consequently errors are possible. Recollection can deviate from the original past both in its elements and in its actual order of succession.<sup>202</sup>

### **Interaction between past and present: time determinations between the act and object of the memory**

In recollection the now appears to us but in entirely different sense than it appears in perception. While in perception the now stands before me as the now, memory constitutes what is not now in

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<sup>199</sup> PITC, 39.

<sup>200</sup> PITC, 63.

<sup>201</sup> PITC, 51.

<sup>202</sup> PITC, 51.

the now. Recalling takes place between two spheres: the actual now and the sphere of the original temporal field.<sup>203</sup> Memory as time-constituting consciousness does not only bring back time past but it also constitutes the realm where the past and present interact. Recollection is the consciousness of the past in the present. It defines that which now exists but is not present to me.<sup>204</sup> Recollection represents a now that is not given. It is a representational consciousness which apprehends an existing object which is not in my perceptual field at the time. The object of memory appears as past, as something perceived at an earlier time, however its appearance comes about in relation to the actually present now. The act of memory is itself not past but rather exists in the now and occurs simultaneously with actual perceiving. Recollection is the consciousness of the past which occurs in the present; it is carried out in the now. In recollection, the interaction between these two temporal spheres constitutes the temporal difference between the act of memory and the remembered object.<sup>205</sup> The act of remembering belongs to the now while the object itself belongs to the past. Memory is a present act but the object of memory is situated in the past with relation to the actual present. When both the act and the object appear as present and have the same time determination, then we have an act of perceiving and not of remembering because the time determination of the act of perceiving and the object perceived is the same. Alternatively, if we lose the temporal difference between a memory and a perception and the distinction between the act and the object disappears, “this would no longer be memory but a (hallucinatory) perception of the past, yet not as past!”<sup>206</sup>

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<sup>203</sup> PITC, 53.

<sup>204</sup> PBE, 367.

<sup>205</sup> PITC, 188.

<sup>206</sup> PITC, 188.

### **Double intentionality**

Memory, for Husserl, implies not only remembering the perceived object itself, but also remembering the act of originally perceiving the object. Recalling thus has two components. It comprises not only the past perception of an object but also the memory of the earlier act of perceiving that led to the perception in the first place. Recalling an object or event is possible only by recalling the original perceiving act that intended the object or event. I recall the past event or object by remembering the past act that correlated to the object.<sup>207</sup>

### **At will**

Recollection constitutes the consciousness of duration and succession at will. It reproduces and modifies perception and therein lies the domain of freedom. Recollection is the ability to return to a perception over and over again at will. Everything that we have perceived can be recalled freely any time. Every memory can be repeated in memory endlessly, while this memory may shift to a memory of memory, and so on in unrestricted numbers.

### **Phantasy<sup>208</sup>**

#### **Refuting Brentano's concept of imagination**

The British empiricists perceive imagination as a broad concept. For them, imagination encompasses a variety of capacities such as the ability to conceive, rearrange perceptions, and is involved in retaining the past, etc.<sup>209</sup> Kant perceives imagination as a mediation between the

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<sup>207</sup> PBE, 236.

<sup>208</sup>The terminological vacillation regarding the different uses of phantasy, fancy, and imagination is left out. In this text these terminations; phantay and imagination are parallel terms and mean the same thing.

<sup>209</sup> See the chapter that deals with the British Empiricists.

empirical and the conceptual,<sup>210</sup> while Brentano, who influenced Husserl most,<sup>211</sup> maintains that the origin of time's representation derives from phantasy. It is phantasy which creates the temporal character, the representation of the time series such as duration and succession. According to Husserl, Brentano believes that this productive representation performed by phantasy "is the sole instance in which phantasy creates a truly new moment of representation, namely, the temporal moment."<sup>212</sup> Since phantasy enables us to experience duration and succession, it makes us conscious of the past. It generates the temporal representation of sensations shifting into the past, "With the shift into phantasy, the sensation receives the continuously changing temporal character; thus from moment to moment the content appears as pushed further and further back."<sup>213</sup> Not only does phantasy generate temporal representations of the past, phantasy is also the realm that constitutes future, that is, expectation, "Phantasy forms – in expectation - the representation of the future out of the past."<sup>214</sup>

Husserl, in his lectures course from 1905, is opposed to the positions of Brentano, the Empiricist and Kant.<sup>215</sup> For Husserl, phantasy is an operation which neither forms original objectivity or capacities nor temporal acts. Indeed, in phantasy duration and succession still produce different temporalities of the imagined event or object. As Husserl writes, "Even in mere phantasy, every individual is extended in time in some way, having its now, its before, and its after; but the now,

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<sup>210</sup> See, Iso Kern, *Husserl und Kant*, (The Hague: Nijhoff, 1962). See also: Richard Kearney, *The Wake of Imagination*, (Minneapolis: University of Minnesota press, 1988), 167-171.

<sup>211</sup> On the influence of Brentano on Husserl and then Husserl's critic on Brentano see, Marvin, Farber, *The Foundation of Phenomenology*, (Frankfurt: Ontos Verlag, 2006), 8- 15.

<sup>212</sup> PITC, 12. Whether Husserl presents accurately Brentano's position on phantasy or not (whether Brentano's presentation is due to a need to form a contrast to his own position regarding phantasy) does not belong to the current deliberation, since the focus here is how Husserl defines phantasy.

<sup>213</sup> PITC, 13.

<sup>214</sup> PITC, 14.

<sup>215</sup> PITC, 16-17,47.

before, and after are merely imagined, as is the whole object.”<sup>216</sup> In contrast to Brentano’s concept of time, for Husserl, phantasy does not constitute time. Rather, Husserl maintains that while we can use expressions which say that what we remember hovers before us in phantasy, “we do not call memory itself a phantasy.”<sup>217</sup> Instead, Husserl ascribes to perception, the two types of memory (retention and recollection), and to expectation the role of organizing time while imagination is excluded from this schematic role.<sup>218</sup> Husserl deprives phantasy from having any role in the constitution original capacity and among them forming time. It neither enables time nor other capacities: “Even the concept of Phantasy does not arise from Phantasy.”<sup>219</sup> Husserl writes: “Now there certainly is re-presented time; but it necessarily points back to a time that is given originally; no presentation [Vorstellung] can ‘spring’ from it. That is, Phantasy is not a consciousness that can set forth, as given itself, some objectivity or other, or an essential and possible trait of objectivity.”<sup>220</sup> Husserl maintains that phantasy cannot generate objectivity. By this, he means that phantasy is a mode of reproduction which is the opposite of original mode of consciousness (presentation), and which comes only after presentation is fully formed. Only presentation can yield an object’s original appearance, objectivity, and therefore phantasy cannot create the temporal representation of perceptions which would constitute original objectivity. The phantasy world is distinguished from perceptual reality and is not involved in its constitution or in any other original constitution. “The phantasy is not mixed into

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<sup>216</sup> PITC, 43.

<sup>217</sup> PITC, 107.

<sup>218</sup> Brian Elliott claims that imagination in Husserl’s phenomenology linked to the analysis of the inner time consciousness. See Brian Elliott, *Phenomenology and Imagination in Husserl and Heidegger*, (New York: Routledge, 2005), 8. However, Husserl opposes this position when he criticizes Brentano (who holds this position). See note 72.

<sup>219</sup> PITC, 47.

<sup>220</sup> PITC, 47.

what is actual but forms a realm of its own, the realm of shadows.”<sup>221</sup> By that, Husserl actually negates both the British Empiricists’ and Kant’s concept of imagination. Neither the Kantian transcendental mediation act between the empirical and the conceptual, nor the empiricists’ conception of imagination applies to Husserl’s notion of imagination. If that is the case, what then is the essence or givenness of phantasy?

### **Some restriction**

Before I move to the analysis of phantasy apprehension, I would like to mention some restrictions regarding the interpretation of phantasy in Husserl’s phenomenology. Though Husserl eliminates the roles that the Empiricists, Kant, and Brentano ascribe to phantasy, some reservations must be mentioned. Husserl argues explicitly that phantasy belongs to the realm of reproductive modification, which stands in direct opposition to original objectivity. Thus, phantasy cannot be involved in any constitution of original objectivity itself.<sup>222</sup> However, phantasy is far from being an unambiguous notion in Husserl’s phenomenology. It is an evasive concept which relates to and subsumes a variety of forms of apprehensions. Husserl does not argue for this indefinite character of phantasy explicitly but he does use expressions which can indicate that his concept of phantasy as representation is stretched and, indeed, intermingles with a variety of other apprehensions such as perception and memory. Moreover, while Husserl investigates the status of phantasy, he doubts “*whether there is such a thing as a completely pure phantasy*”<sup>223</sup> in which phantasy can be separated from all the acts of actual experience. In the realm of actual experience, experiences are bound into the flow of consciousness (retention-perception-protection and recollection-phantasy-expectation). Though phantasy does not have a

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<sup>221</sup> PBE, 180.

<sup>222</sup> PITC, 17.

<sup>223</sup> PBE, 610.



role in the time flow, Husserl inserts it into the flow of consciousness. What does this act of insertion of phantasy to the flow of consciousness bring about for phantasy's relation to reality and to actual experience? Furthermore, our role as observers in our phantasies is not naturalized since we are already involved in actual existence and our phantasies are immersed in our experienced reality. Phantasy is bound up with non-phantasy acts. It can be bound up with perceptual fields in either the present or the past. Yet, this does not mean that phantasies achieve a total blend of present and past. Husserl indicates several ways in which phantasy, perception, and memory can be blended. However, this synthesis will never be indistinguishable (such as in the case of physical image). One example which can imply that his concept of phantasy does involve in original objectivity is when phantasy fills in the unseen parts of the object in our perceptual field. Objects appear perceptively, they are never given in their totality, but always in a limited way, yet, experience itself intends the whole object and appears immediately. We perceive physical object from a specific perspective. We can perceive only a part of an object and never all of it from all vantage points at the same time. Only part of the intended object is given from any one specific perspective, (the front surface or the back surface, etc.). For example, when we perceive a chair, we cannot see the back side if we stand in front of the chair, but only the front side of the chair. However, when I perceive an object like a chair, I intend not only one surface of it but the whole chair. Consequently, some gap between the intended object and the given object exists. Or as Dan Zahavi puts it: "Our intentional directedness toward spatio-temporal objects are consequently characterized by the fact that we persistently transcend the given in order to grasp the object itself. Although perception is defined as the intentional act that aims at giving a full presentation of the intended object, that is, to let the object show itself

fully as it is, this remains as ideas when it comes to physical objects.”<sup>224</sup> We know intuitively that an object is constituted from the sides or parts that we do not see, as well as from those that we do see. This supplement is provided by phantasy.<sup>225</sup> In that sense, phantasy is involved in original perceptual sphere. Furthermore, in some other places of Husserl’s texts, it is possible that Husserl sees imagination as a broad concept similar to the way that Hume and Kant view imagination.<sup>226</sup> In these places, Husserl refers to memory in terms of phantasy presentation. Phantasy here refers to the ability to encompass memory. Still, these mentions are not consistent and are contradicted by other ones which state quite the opposite. For example, elsewhere, Husserl argues that “presentations belonging to memory and expectation, in which non-present objects are determined in the mode of realities as having existed earlier or as expected with certainty, are not designated as phantasies... but what is here taken to be phantasy is not a matter of determinate expectations, but of things merely imagined.”<sup>227</sup> In other places Husserl, refers to phantasy as the general ability to represent other acts of knowing such as judgment, volition, desire, etc. Phantasy in that sense is opposed to these original acts such as judgment, volition, etc. The difference between phantasy and these acts of knowing is that phantasy does not lead to deeds as judgment or volition do, though phantasy’s status is not quite completely imaginary. Husserl also refers to phantasy as involved in the casual process, stating that “phantasy activity considered as a casual process taking place in psychic action; and naturally the same is true of the result of the action, of the work of phantasy considered as the result of a casual process.”<sup>228</sup> Overall, Husserl does not refer to these modes of phantasy explicitly. These allusions are

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<sup>224</sup> Dan Zahavi, 33-34.

<sup>225</sup> PBE, 181.

<sup>226</sup> LI, II, 595.

<sup>227</sup> PBE, 4.

<sup>228</sup> PBE, 2.

scattered throughout his texts, and their implications are not explicitly described. Therefore, I will deal only with those characteristic and arguments that are explicitly addressed by Husserl.

### **The Distinction between phantasy and perception**

Husserl contrasts the appearance of an object in phantasy-consciousness with what appears in perception. Phantasy, the experience of internal seeing, is not only opposed “to the external seeing that belongs to perception,”<sup>229</sup> but also “to the intuitive positing of past and future as true; in short to all acts that posit something concrete as existing.”<sup>230</sup> Husserl claims that Brentano overlooks the fundamental difference between sensations and phantasms. Brentano holds that the differences between phantasy and perception are in terms of intensity, steadiness and mutability. Phantasms are less intense, steady but more inconstant than sensations. Indeed, Husserl himself points to the inconsistent character of phantasy.<sup>231</sup> The image in phantasy presentation is “fluctuating, unsteady changing, now growing in fullness and force now diminishing, hence something continually changing immanently in the scale of perfection.”<sup>232</sup> Nevertheless, despite the fact that phantasied objects are modified perceptions and characterized by perpetual fluctuation, discontinuity, and instability of appearance, Husserl maintains that phantasy and perception are both two simple intuitive modes. An identical appearance can emerge in both modes. The same content can appear at different times to different apprehensions, it can belong at one point to perception and at another point to phantasy. The potential coincidence of imagination and perception proves for Husserl that the distinction between the two has to depend

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<sup>229</sup> PBE, 3.

<sup>230</sup> PBE, 4.

<sup>231</sup> PBE, 65.

<sup>232</sup> PBE, 65.

on the mode of apprehension and not on the content.<sup>233</sup> If this is the case, new questions arise. What are the different features of phantasy-apprehension and perceptual-apprehension? What characterizes phantasy-consciousness as distinct from perception? How do we know when perception-apprehension or phantasy-apprehension is taking place?

### **Lack of reality and the mode of “as if”**

What distinguishes phantasy from perception is mode of consciousness involved. The distinction “lies in the *characterization* that constitutes the difference between present and re-presented.”<sup>234</sup> The mode of perception is characterized as presentation, while the mode of phantasy as re-presentation and reproduction. Re-presentations in the sense of phantasy “lack the consciousness of reality in relation to what is phantasied.”<sup>235</sup> For phantasy, the type of consciousness involved is not believed to be actual;<sup>236</sup> it does not posit the characteristic of actual existence but instead imaginative characteristics. While in perception, we are conscious of objects or events that now existing, in memory we are conscious of objects which having existed in the past. Conversely, in phantasy the reproduced object does not have any mode of existence.<sup>237</sup> Phantasy is the presentation of what is not present, “the object itself appears... but it does not appear as present. It is only represented; it is as though it were there, but only as though.”<sup>238</sup> Modes of belief such as “as-if,”<sup>239</sup> “as it were,”<sup>240</sup> and “quasi” express the character of phantasy. Memory is also the consciousness of “as-if” but it refers to actual past and being, while the “as-if” of phantasy is

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<sup>233</sup> PBE, 99.

<sup>234</sup> PBE, 107.

<sup>235</sup> PBE, 4.

<sup>236</sup> PBE, 172.

<sup>237</sup> PBE, 673.

<sup>238</sup> PBE, 18.

<sup>239</sup> Husserl distinguishes between the modification of perception to a mode of a doubt and the mode of modification in phantasy. PBE, 672.

<sup>240</sup> PBE, 345.

directed against actual existence. In contrast to illusion or hallucination, which enforce themselves into the perceptual field and therefore blur the distinction between the unreal and real perceptions and hold the perceived as genuine perceptual appearance, phantasy distinguishes itself clearly from the actual real with its mode of “as if”.

### **Two apprehensions**

Phantasy apprehension is a more complicated phenomenon than perceptual apprehension. While in perceptual presentation there is only one object and this object is the object that meant, in phantasy presentation there are two intermingling apprehensions which constitute two objects: 1) apprehension of the image, and 2) apprehension of the represented object that is the depicted subject. The act of meaning is directed not toward the representation, but toward the subject itself. The object that appears in phantasy is not independent but is taken for another, non-appearing objectivity represented in image. Phantasy represents an object by generating another object resembling it. Even if the object that appears in phantasy perfectly resembles the perceptual object, there is still a conflict of consciousness resulting from different intentional contexts.

### **Free supposition**

While in perception, there is “a small sphere of freedom,”<sup>241</sup> experiences are determined by the nature of the perceptual situation and the relation of the subject to it. In contrast, phantasy is the realm of freedom.<sup>242</sup> It is characterized by “its optional character.”<sup>243</sup> Everything which was

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<sup>241</sup> PBE 641.

<sup>242</sup> PBE, 642, 559.

<sup>243</sup> PBE, 642.

existed can be replaced in phantasy and imagined otherwise. The phantasy world has an open horizon; all the restrictions stemming from belief are excluded. It is the realm of possibilities. The fulfillment of the horizon of phantasy is a voluntary. It is the integration of two acts: 1) the first act, which Husserl calls *free supposition*, is fundamental since it determines the object. This initial act actualizes phantasy. Free supposition enables the second component of phantasy: 2) the directness of phantasy towards an object which was first determined by the free supposition.<sup>244</sup> Every act is directed toward something, and since phantasy is not capable of constituting objects, the act of free supposition determines the content or object of phantasy. Free supposition enables intentionality to be aimed to its essence. Both memory and imagination involve free act of setting out. However they are different in the sense that the intention in both these acts is actualized in a different way. In memory, the intention is aimed at objectivity is involved with the belief of an “objectivity that presents itself as intrinsically real.”<sup>245</sup> In memory, the supposition has the characteristic of a belief. In phantasy, this belief is neutralized. Phantasy frees itself from belief and replaces belief with “as if.” “The being actual turns into being-as-if (as if it were reality).”<sup>246</sup> However, phantasy is subject to some constraints as well. Some of the natural laws and eidetic necessities that bind perception constrain phantasy as well. For example, in phantasy, every object is extended in time and has its now, past, and after, though these constraints are merely imagined. The difference between the phantasy, recollection, and perception is that phantasy represents the now but its object is not now, it does not represent the actual now, while perception and primary memory do intend the now.

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<sup>244</sup> PBE, 671.

<sup>245</sup> PBE, 671.

<sup>246</sup> PBE, 672.

## **Two phantasy forms: ordinary phantasy and perceptive phantasy**

Husserl distinguishes between two conscious apprehensions belonging to phantasy: reproductive phantasy and perceptive phantasy. Reproductive phantasy represents objects that stand in opposition to perception. As was mentioned above, its objects do not appear to us in their own person and they lack a sense of real existence. Rather, it appears in the mode of the “as though”, “as-if.” However, the second characteristic of phantasy apprehension bears relation to the perceptual field. Here, phantasy presentation appears by means of physical image. These two phantasy presentations are further distinguished by two types of imaginative apprehension: external and internal images. 1) **An ordinary phantasy** has no image object<sup>247</sup> which is given perceptually and functions as a representant for something beyond it. The ordinary phantasy represents an intended object which is not present. In ordinary phantasy, the phantasy consciousness is purely internal. In contrast, 2) **the Image Object**<sup>248</sup> is an imaginative consciousness that derives from external, perceptual consciousness. It appears in the mode of perception as a physical image. In that sense imagination is mediated by external physical objects, such as photograph, painting, engraving, theatre show, and film, and represents another object by means of resemblance. The function of physical object is to awaken a mental image. It substitutes for another object which is absent from the perceptual field. Imagination, on the basis of perception, constitutes an image object in the present. Although the physical object appears in the perceptual field as present, it nevertheless points to and is taken for something else. The image object points beyond itself, toward the image subject. An example of an image object is the image of a child in photograph. The image of the child points to the child who is the subject

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<sup>247</sup> By image object, Husserl means perceptual object.

<sup>248</sup> PBE, 21-22.

of the apprehension,<sup>249</sup> or for example, a painting of a landscape points to the landscape itself that is represented in the painting. The image object refers to a subject that is not present. In image consciousness, sensations are the content of apprehension: lines, colors, shapes, and so on. However the apprehension here is not of perception, but of presentation by means of resemblance.<sup>250</sup> The image object is aimed at representing another object by means of resemblance. This image object is present, but it refers to and represents an object which is not present.<sup>251</sup> The portrait of a child is taken as a representation of the image subject, for the non-appearing child who is represented in the photograph. The physical object is based on perception, however the apprehension exceeds beyond the perceptual apprehension and performs an imaginary apprehension. It has double status: on the one hand it is a perceptual existing object, on the other hand it functions as an imaginative representation of something not present. Image objects appear as actual perceptual object, but they produce a conflict with the actual present. An image object appears in the perceptual field in the sense that a picture, for example, hangs on the wall. It is indeed part of a room but at the same time conflicts with it. “The conflict that comes from being placed into the surroundings of ‘reality.’”<sup>252</sup> While in an image object, the apprehension is based on perception in that the image establishes itself as a part of the perceptual field, in the actual reality of the present, the image is not merely perceptual apprehension and does not function as actual. In contrast to perception, the image object bears the characteristic of unreality. The image object is figment that fluctuates between its two roles in the perceptual field and in the phantasy field of “as if”. It is not real in a sense that the represented object (the child in the picture) does not presently exist as real. Thus, image objects appear in reality without

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<sup>249</sup> PBE, 20.

<sup>250</sup> PBE, 28.

<sup>251</sup> PBE, 89.

<sup>252</sup> PBE, 175.



having the character of reality. Imaging apprehension is grounded in an image object, and therefore it is part of the perceptual field. However, its characteristic act—not its perceptual appearance—distinguishes imaging from perceiving. Since both the physical object that belongs to image consciousness and the perceptual object appear in the perceptual field, the difference depends on the apprehensional act. In order to form an image phantasy, an objectivating consciousness is required; apprehension that interprets the image's content and produces an act of meaning.<sup>253</sup> The act of objectivation constitutes the presenting image intentionally. In image presentation, Husserl distinguishes between the subject and the image. The subject is the object meant by presentation. The image object presents the subject, but it at no point is the subject. As for ordinary phantasy, not only does it not appear at all in the perceptual field, it is totally separated from the world of the actual present. In an ordinary phantasy, in contrast to physical imagining, the conflict with the perceptual field does not exist because they function on two completely separate levels. Husserl claims that the apprehension belonging to physical image presentation is more complicated than the apprehensions belonging to phantasy presentation. While in perceptual presentation, there is one apprehended object and in an ordinary phantasy image, there are two apprehensions, in physical image presentation actually three objectivities are interwoven: 1) the physical object, the material, be it paper, canvas, wood and so on; 2) the representing object or image object; and 3) the represented object, or the image subject.<sup>254</sup> The image subject is intended through the image object by means of the material, physical object.

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<sup>253</sup> PBE, 24.

<sup>254</sup> PBE, 21.

## General differences

Image consciousness and ordinary phantasy both imply a consciousness of something absent. However, in image-consciousness, I intend an object that is represented by another perceptual object such as picture, photo, etc. Phantasy intends an absent object that is neither embedded in a physical object nor confined to represent an object by means of resemblance. The image objects, in contrast, do represent an absent object but by means of resemblance. The person in the picture for example, represents a real person. Furthermore, while in ordinary phantasy, the perceptual field disappears, in image consciousness, the perceptual field not only does not disappear but serves as the surrounding of the image object, such as the wall forms the background of a picture. It is also important to see the distinctive intentionality of an image consciousness (image object) in contrast to perception. Image consciousness partially functions as a form of perceptual consciousness since it appears as present directly in itself. However, it is not a perceptual object in the same way that a simple perceptual object is, since it represents the image of an object that is not actual in the physical object itself. The subject of the picture, for example, does not appear but is meant and implied. In perception, what appears is also what is meant, while in image consciousness the image object that appears is present but not meant. This object representation entails discrepancy between what appears and what is meant. There are different levels of correspondence between the image object and the image subject (such as intensity, size). Yet, the physical object stabilizes the image object. It appears in the same sensuous force and intensity as perceptual object while ordinary phantasies are prone to fluctuation and variance.<sup>255</sup> The difference between perceptual apprehension and apprehension of an image object depends on the characteristic of the apprehensional act.

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<sup>255</sup> PBE, 62- 63.

## **Image object as a basis for various forms**

Phantasy in the form of image object serves as a basis for various forms of presentations such as aesthetic, symbolic, and signative presentation. Although all these apprehensions have in common the fact that they point beyond themselves, they differ in some respects. While the imaging apprehension points to a similar object, the image objects of symbolic and signitive apprehensions do not resemble the aimed object but instead points to a different object. “In symbolic presentation, the meaning regard is pointed away from the symbol; in pictorial presentation, it is pointed toward the image.”<sup>256</sup> In the act of symbolization, the symbol appears for itself but also bears relation to something else. The symbolizing image’s mediation is equivalent to reading a word. “The word itself is seen but not meant.”<sup>257</sup> The meaning of the word is meant. The word is taken as a sign. After the first apprehension of the appearance of the word, a second apprehension occurs where the word’s meaning is manifest. The meaning is directed toward the referent of the word and not toward the word itself.<sup>258</sup> Image consciousness does not only involve the perceptual and phantasy apprehension but can also employ memory. The image object can function to reproduce an object by means of memory.<sup>259</sup> In that sense, image object can be, for example, a small reproduction of a well known painting which evokes memory of the original painting.<sup>260</sup> In the case of aesthetic consciousness,<sup>261</sup> the image object itself is intended and does not point toward a different object.<sup>262</sup> In aesthetic contemplation, the phantasy apprehension is directed towards the image itself and the subject is not external to the

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<sup>256</sup> PBE, 37.

<sup>257</sup> PBE, 26.

<sup>258</sup> PBE, 26.

<sup>259</sup> PBE, 38.

<sup>260</sup> PBE, 38.

<sup>261</sup> PBE, 37- 41.

<sup>262</sup> The aesthetic object has a bit different status but it bears similar attitude; the aesthetic object appears as present but is not taken as actual.

image. In this case, we immerse ourselves in the image. The aim is in the way the art embodies its form, and it does not necessarily awaken the memory of another non-appearing object. In contrast to phantasy presentation (where the focus is directed toward the image subject), here we are interested in the manner of appearance. The physical image is not separated from the image subject. The aesthetic image is set apart from reality and is grounded in conscious imagining. Each of these acts constitutes different meaning but all of them involve in imaginative constitution. All of these integrations of phantasy apprehension with other types of apprehensions stand in opposition to pure and ordinary phantasy. Here again, Husserl does not indicate it directly, however, it seems that he ascribes the role of relating the image object to the image subject to phantasy apprehension. Whether the image subject coincides with the image object or is separated from it and the image object functions as awaking a presentation of something which is external to the image, the function of phantasy is to immerse us into the image subject.

### **Summary**

In his phenomenology, Husserl initiates a change of attitude toward reality. His motivation was to validate the correlation between modes of apprehension and their correlated objects.

Therefore, he suspends all assumptions regarding actual external reality and instead deals with the phenomena, with appearances. He approaches these phenomena by investigating acts of consciousness and the way they intend, intuit, represent, recollect, and phantasy the world.

Husserl investigates the primordial, a priori structures of apprehension and seeks to establish the essential structure of each act of consciousness. The essential structure of acts of consciousness is intentionality; its directness toward the object, characteristics of meaning, objectivation, and the relation that it constitutes with its content. The conscious acts are distinguished not by their

content of the object, but through their intentionality. Husserl divides conscious acts into two different modes of time-constitution: immediate and reproduction. This distinction brings about division between primal impressions, retention, and protention on the one hand, and recollection, phantasy, and expectation as forms of representation on the other hand. Both memory and phantasy are forms of reproduction and they represent in the now that is absent. Secondary memory and phantasy are characterized in the same way. The only thing that distinguishes between them is whether their object is actual or not. Memory represents an actual object or event, whereas phantasy represents a nonexistent object. While memory is affixed with the belief that its object refers to an real past, in phantasy this belief is neutralized and replaced with free supposition characterized by the apprehension of the “as-if”. Phantasy is not such a simple concept, and indeed Husserl deprives it from the constitutive characteristics that the empiricists, Kant and Brentano ascribed to it. Yet, Husserl’s concept of phantasy is a concept that engaged with varieties of modes and through them is involved in various forms of representation such as perceptual, aesthetic, signitive, symbolic and memory apprehension.

The particular mode of apprehension and its relation to the object constitutes both the ontological and epistemological status of the object. Each mode of apprehension ascribes either actuality, present, or past existence to the events or objects or refers to the object as fictions. Husserl explains the different characteristics of each act and distinguishes between their modes of apprehension with reference to their relation to the object and their constitution in relation to internal time consciousness. However unexplained aspects are still present. We know different ways in which an object is identified or categorized, however, we do not know how it is constituted in that way. Husserl does not explain how each act forms its particular mode of apprehension. Yes, primal impressions are original, belief is attached to memory, and phantasy is

free supposition which represents objects that are not actual. However, how each act is constituted in each specific way is not explained in Husserl's Phenomenology. Indeed, Husserl explains the difference between memory and phantasy, but he does not explain how the memory constitutes the object as a memory and phantasy constitutes the object as a non-actual phantasy. He indicates the different qualities each mode of apprehension has, but not the unique way in which they constitute their object. Furthermore the phenomenological method does not provide us completely escape from doubts, errors, or confusion. The approach does not explain how the apprehensional correlation with the object takes place in the first place. It is unclear how the intentionality of each act of apprehension necessarily establishes a correlation with the object. Is it possible that an intentional act generates a false objectivation? How can we know that we are really establishing the correct correlation between our mental intention and the object when we deal with perception, memory, or phantasy? How do we know that appearance does not mislead our consciousness or that our consciousness itself does not misinterpret the phenomena? Husserl describes states of misapprehension such as illusion and hallucination, and distinguishes between them and phantasy. Illusions and hallucination force themselves on our perceptual apprehension thereby blending the real and unreal without our ability to discern between them, while in phantasy this epistemologically defective synthesis does not take place.

However, what about confusion between memory and phantasy? If these two modes both represent the absent, how can we ensure confusion between the two is excluded? Is the belief attached to memory sufficient enough to ensure that there is no confusion with other modes of apprehension? Husserl himself distinguishes between retention and recollection in terms of evidence: while retention is evident, recollection is liable to errors. Indeed, Husserl's phenomenology establishes the ideal constitution of different apprehensional modes and their

relation to objects, but still does not provide us with validity regarding the way conscious acts intend the appearance of objects.

## **Neuroscience and the epistemology of memory and imagination**

### **Neuroscience of memory**

#### **Introduction**

Neuroscience postulates memory as a mechanism that is composed of multiple systems, forms, functions and processes. Traditionally, philosophers characterized the ontology of memory through various spatial metaphors,<sup>263</sup> such as Plato's wax tablet metaphor or the birds in an aviary model,<sup>264</sup> "the treasure house of ideas" by roman rhetoricians,<sup>265</sup> the metaphor of library in the middle ages,<sup>266</sup> Locke's repository metaphor which describes memory as the storehouse of ideas,<sup>267</sup> and William James' metaphor of painting our past on a canvas.<sup>268</sup> Memory was imagined as a storage place and assessed in terms of quantity, how much information can be retained and stored.<sup>269</sup> Most of these spatial conceptions implied a passive notion of memory. A memory was arranged in a physical place, like an item in a storehouse, complete and available

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<sup>263</sup> For a more comprehensive review of spatial metaphors see, Henry L. Roediger, "Memory Metaphors," in *Cognitive Psychology, Memory & Cognition*, Volume 8, Issue 3 (1980): 231-246.

<sup>264</sup> Plato, *Theaetetus*, Wax Tablet: 190e5-196c5, Aviary: 196d1-200d4.

<sup>265</sup> Cicero, *Rhetorica Ad Herennium*, trans: Harry Caplan, (London: William Heinemann Ltd, 1954), 205-225.

<sup>266</sup> Frances A. Yates, *The Art of Memory*, (London: Routledge and Kegan Paul, 1966).

<sup>267</sup> John Locke, *An Essay Concerning Human Understanding*, Chapter X, *Of Retention*.

<sup>268</sup> William James, *The Principles of Psychology*, vol I, Chapter xvi, (Cambridge: Harvard University press, 1981), 605.

<sup>269</sup> Another metaphor drawn from physical space is the Method of Loci technique, but this technique is different than other metaphors since it encourages recalling through the organization and visualization of memories in physical locations, rather than likening memory itself to a space. See Yates, *The Art of Memory*, 1-26.

for the owner to draw on at any time. Thus, spatial analogies presuppose that the person doing the remembering simply needs to pull a memory out from a storage location. As for the epistemology of memory, as was discussed above, a prevalent criterion was the strength of memory, which manifested itself in its vividness and distinctiveness. Memory was understood to vary in force and accessibility compared to other mental processes such as perception and imagination.<sup>270</sup> Other criteria for attributing mental images to memory were Williams James' feeling of belief and "warmth and intimacy"<sup>271</sup> or according to Bertrand Russell, a sense of familiarity that invokes a belief in the accuracy of the memory.<sup>272</sup>

Over time, the study of memory has shifted from philosophy to psychology, to experimental research,<sup>273</sup> behaviorism, to cognitive revolution,<sup>274</sup> and, finally, to the paradigms of neuroscience (which includes cognitive psychology, neurobiology, and physiology).

Consequently, the concept of memory has changed, spreading over range of domains and disciplines. Current views of memory no longer conceptualize it with reference to the amount of space or through criteria such as vividness or familiarity, which in current view are no longer inductive of its reliability. Neuroscientists approach memory from different perspectives that focus on different levels of its ontology. For example, some neuroscientists tackle the whole process of memory, while others concentrate on a specific part of the process, approaching memory at the time of stabilization or at the retrieval phase. Still other neuroscientists focus on the physical trace of memory in the brain (engram) as some deal with the function of memory systems and others with its underlying neural mechanisms. In contrast to past philosophers who

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<sup>270</sup> See the chapters on the British Empiricists.

<sup>271</sup> William James, *The Principles of Psychology*, vol I, Chapter xvi. 612.

<sup>272</sup> Bertrand Russell, *The Analysis of Mind*, (London: George Allen & Unwin LTD, 1921), 161.

<sup>273</sup> Gillian Cohen, "The Study of Everyday Memory," in *Memory in the Real World*, ed. Gillian Cohen and Martin Conway, Psychology press, New York, 2008. 2.

<sup>274</sup> The cognitive revolution began in the late of 1950s and 1960s.



viewed memory as one faculty, neuroscientists share the view that memory is composed of multiple systems, forms, functions and processes. Nonetheless, the science of memory has not abandoned spatial analogies: memory is still localized but at a level beyond metaphor. Indeed, neuroscientists investigate the physical basis of memory in the brain, how memory is embedded in different brain areas, and how neural circuitry supports both plasticity and memory expression. Yadin Dudai, for example, defines memories as “experience-dependent internal representations [...] acquired models of the world, encoded in the spatiotemporal activity of brain circuits.”<sup>275</sup> However, while neuroscientists localize memory, they reject the passive view of memory in favor of viewing memory as a dynamic and generative process.<sup>276</sup> The process of memory formation depends on flexible and elastic mechanism. This mechanism involves the reorganization and dissipation of memories across different neuronal sites. Subsequently, retrieval of information does not just mean finding a stored object or pulling a past experience out from storage in a particular place,<sup>277</sup> but the active reformation and reconstruction of it. Both cognitive psychologists and neuroscientist postulate that memory is a constructive process and emphasize the labile characteristics of memory.

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<sup>275</sup> Yadin Dudai, “Molecular Bases of Long-Term Memories: A Question of Persistence, Current Opinions in neurobiology, 12 (2002): 211.

<sup>276</sup> Bartlett initiated this constructive view of memory. He claimed that memory involves an active replay of a past experience rather than a passive reproductive: “The first notion to get rid of is that memory is primarily or literally reduplicative, or reproductive. In a world of constantly changing environment, literal recall is extraordinary unimportant.” F. C. Bartlett, *Remembering: A Study in Experimental and Social Psychology*, (Cambridge: Cambridge University press, 1932), 204.

<sup>277</sup> Endel Tulving, *Element of Episodic Memory*, (New York: Oxford University press, 1983), 5.

## **The neuroscientific ontology of memory**

### **Multiple memory systems (episodic, semantic, procedural)**

Memory is not a single faculty but is composed of multiple separate systems. Endel Tulving states “that there is no such thing as ‘the memory’ rather we have to distinguish between different forms of memory.”<sup>278</sup> In a similar way, Schacter also states that “Memory is not a single or unitary faculty of the mind, as was long assumed. Instead, it is composed of a variety of distinct and dissociable processes and systems.”<sup>279</sup> The reason that cognitivists divide memory to subsystems derives from the inability to state generalizations that explain all the variety memory types and expressions.<sup>280</sup> Psychologists categorize and classify forms of memory according to types of knowledge they represent, and also by their underlying mechanism, process, method of acquisition and functions they might serve. In short, different kinds of memory depend on different brain systems and correlate with different neural expression.<sup>281</sup> By identifying multiple memory systems, researchers assume that different brain areas support different memory systems and, as a result, a memory with one feature, such as consciousness, necessarily correlates to specific brain region such as the hippocampus whereas a memory not associated with awareness relies on another area, the basal ganglia and related brain structures.<sup>282</sup>

Evidence for multiple systems has its origins in several sources, but mainly from studies of amnesic patients with brain lesions. This brain lesion research leads psychologists and cognitivists to identify correlations between behavior and cognitive expression in brain areas

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<sup>278</sup> Tulving, *Elements of Episodic Memory*, 5.

<sup>279</sup> Daniel L. Schacter, *Searching for Memory: The Brain, The Mind, and the Past*, (New York: BasicBooks, 1996), 5.

<sup>280</sup> Endel Tulving, *How Many Memory Systems Out there?* *American psychologist*, 40, (1985), p.387

<sup>281</sup> Tulving, *How Many Memory Systems Out there?* 387.

<sup>282</sup> Daniel B. Willingham and Kelly Goedert, “The role of Taxonomies in the Study of Human Memory, Cognitive,” *Affective & Behavioral Neuroscience* 3 (2001): 250.

responsible for a given function since lesions can affect one type of function but not necessarily the other. Thus, studies of human amnesia and brain damage lead psychologists to dissociate various kinds of memory, such as declarative (explicit memory) from procedural memory (implicit memory).

The most famous case, which is widely mentioned in the literature, is of a patient named H.M, who suffered from severe epileptic seizures. Treating the seizure, the neurosurgeon, William Beecher Scoville, removed part of his inner medial temporal lobe on both sides of the brain. The surgery, while giving H.M. relief from his seizures, it left him severely amnesic.<sup>283</sup> After the surgery, H. M. was not able to learn new information, although his short term memory was not impaired and he could only retain information for few minutes. This case cast light on several important issues. Until then, researchers associated the hippocampus with other mental phenomena such as emotions, autonomic regulation, sleep and respiration, and sexual behavior.<sup>284</sup> Due to this case, it was conjectured that the hippocampus plays a critical role in memory.<sup>285</sup> Behavioral experiments with H. M. showed that he could acquire new skills, but that he had no memory of learning them. This finding suggested that memory for skills is different long term memory and is disassociated from other memory types.

Another notable case study was the patient K.C., who became amnesic as a result of head injury. K.C. lost all his episodic memories but could retain factual knowledge (semantic memory), including information on himself. Although he knew the information such as his date of birth and

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<sup>283</sup>The surgery resulted in anterograde amnesia and temporally graded retrograde amnesia. William. b. Scoville, & Milner, B., "Loss of Recent Memory after Bilateral Hippocampal Lesions," *Journal of Neurology, Neurosurgery, and Psychiatry*, 20, (1957): 11-21.

<sup>284</sup> William Bechtel, "Molecules, Systems, and Behavior: Another view of Memory Consolidation," in *Philosophy and Neuroscience*, ed. John Bickle, (Oxford: Oxford university press, 2009), 17.

<sup>285</sup>Carl Craver, "The Making of Memory Mechanism," *Journal of the History of Biology*, 36, (2003): 153-195.

educational record, he did not remember experiencing this information.<sup>286</sup> After the injury, he could learn new semantic information and skills but could not remember episodic experiences. Thus, researchers concluded that impairment of episodic memory could take place without the impairment with other memory systems, illustrating the disassociation between the systems. These studies of H.M., K.C. and other amnesic patients have shown that formation of new declarative memories relies on the hippocampus while permanent long term storage for those memories lies in other areas in the brain.<sup>287</sup> In other cases described by Michale D. Kopelman and Narinder Kapur, the patients display severe impairments of semantic memory, while their autobiographical memory remains intact.<sup>288</sup> Thus, it is important to taxonomically distinguish the varied forms, activities, and operations, identifying different ways each memory system behaves and what functions they serve. These classifications are not merely convenient for theoretical purposes, but are based on the way our memories are constructed and how we remember since different brain structures process different types of memory.

However, while scientists agree that there are multiple definitions and types of memory, there is no complete agreement about how to categorize memory systems.<sup>289</sup> For example, the debate on the multiple systems and distinguishing features of long term memory has not yet reached a resolution.<sup>290</sup> On the other hand, researchers agree that memory varies by duration, and length of storing (working memory, short-term versus long-term memory). They also agree that memory

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<sup>286</sup> Endel Tulving, *Episodic Memory: From Mind to Brain*, *Annual Review of Psychology*, 53, (2002), 1-25.

<sup>287</sup> Tim, Bliss, "The Physiological Basis of Memory," in *From Brain to Consciousness? Essays On the New Sciences of the Mind*, ed. Steven Rose (Princeton: Princeton University press, 1998), 75.

<sup>288</sup> Michael D. Kopelman and Narinder Kapur, "The Loss of Episodic Memories in Retrograde Amnesia: Single-Case and Group Studies," in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, Martin Conway & John Aggleton, (Oxford: Oxford University Press, 2001), 111.

<sup>289</sup> While Endel Tulving distinguishes between episodic and semantic memory Larry Squire emphasizes the common between episodic and semantic memory.

<sup>290</sup> Foster J. K., & Jelicic M., "Memory: Systems, Process, or function?" (Oxford: Oxford University Press, 1999). And Schacter D. L. & Tulving E, *Memory Systems*, (Cambridge, MA: MIT Press, 1994).

varies by the kind of the stored information, such as whether memory expresses itself as mental representation (propositional memory) or mental process (skills, habits), or whether there is or is not awareness of the memory (conscious or non-conscious). Each of these memory types has different features and fulfills specific goals. Autobiographical memory, for example, functions to form personal identity and a concept of a self; prospective memory enables us to carry out plans and intentions;<sup>291</sup> semantic memory handles factual and general knowledge; procedural memory enables us to acquire and perform skills automatically.

Although memory systems each have distinctive goals, they are interrelated and share components; the operation of one memory system may overlap with the operation of another memory system.<sup>292</sup> For example, Tulving maintains that memory is evolutionary mechanism and is arranged hierarchically. The three memory systems (procedural, semantic and episodic) emerged at different stages of the species evolution and develop at different stages in the growth of the individual organisms. These systems constitute mono-hierarchical arrangement, divided according to operation, function and characteristics. Each higher system depends on and is supported by a lower system, illustrating the interrelatedness of memory systems. Indeed, procedural memory contains and supports semantic memory as a subsystem, and semantic memory contains and supports episodic memory as a subsystem. However, each system nevertheless possesses unique features. Since procedural system is the lowest memory system, it is the only system that can operate independently of the other systems. Semantic memory can function independently from episodic memory, but not independently from procedural memory

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<sup>291</sup>Gillian Cohen, "The Study of Everyday Memory," in *Memory in the Real World*, ed. Gillian Cohen and Martin Conway, Psychology press, New York, 2008. 1.

<sup>292</sup> Endel Tulving, "Episodic and Semantic Memory," in *Organization of Memory*, ed. Endel Tulving & w. Donaldson, (New York: academic, 1972), 401.

and episodic memory depends on both procedural and semantic memory.<sup>293</sup> Squire, in contrast to Tulving, formalizes the systems a bit differently, claiming that episodic and semantic memory are two parallel sub-branches of the hierarchy.<sup>294</sup>

### **Short term and long term memory**

Dual-trace-theory maintains that experience initiates two memory traces: short term and long term memory traces. It is not clear whether these two forms of memory are separate systems, that is, whether they are distinguished functionally and structurally or only by their availability.<sup>295</sup> Regardless, different decay and capacity rates distinguish short and long term traces. The rate of forgetting in short term memory is rapid and its capacity is limited because short term memory traces hold small amount of information for short periods. In psychology, short term memory is measured by the number of items that a subject can repeat immediately after their presentation. Short term memory can incorporate  $7 \pm 2$  items and, in terms of time, it lasts no longer than a minute. In short term memory, three main phenomenon trigger forgetting: the passage of time, spontaneous forgetting, and the interference process (when new information displaces old information). Long-term memory, by contrast, is characterized by persistence over time.<sup>296</sup> It requires time to develop and has a much slower decay rate. Its capacity is unlimited. It is mediated by long-term potentiation, which facilitates learning and remembering, and, also long-term depression, which weakens the synaptic activity that supports a memory. The traces of short-term memory and long-term memory are not only distinguished by their duration but also but their rate of vulnerability and their state as active or passive. While short-term memory is

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<sup>293</sup> Endel Tulving, "How Many Memory Systems Out There?" *American psychologist*, 40, (1985): 387.

<sup>294</sup> Larry R. Squire, *Memory and the Brain*, (New York: Oxford University press, 1987).

<sup>295</sup> Gabriel Radvansky, *Human Memory*, (Boston: Pearson education, 2011), 66.

<sup>296</sup> Yadin Dudai, "Molecular Bases of Long-Term Memories: A Question of Persistence", *Current Opinions in neurobiology*, 12, (2002): 211-216.

active and vulnerable, long term memory is inactive and less vulnerable. Short term memory and long term memory involve different brain systems and require different molecular components.<sup>297</sup> Long-term memory is itself divided to two additional systems: non declarative (implicit memory)<sup>298</sup> and declarative, propositional memory (explicit).<sup>299</sup>

## **Long term memory: non-declarative and declarative memory systems**

### **Non-declarative memory- procedural memory**

Non-declarative memory encompasses forms of learning that function without dependence on representation but are instead expressed through non-symbolic behavior. While a subject can express a declarative memory, one can only demonstrate a non-declarative memory since this type of memory does not contain representations but, rather, actions.<sup>300</sup> Encoding such non-declarative memories requires practice and repetition until the subject becomes skilled. It is expressed and measured through performance and by capability.<sup>301</sup> Because it centers on such actions, this memory type is automatically retrieved and resides below the level of conscious awareness.<sup>302</sup> That is, changes in procedural memory are expressed in behavior, but are not necessarily conscious and are based on implicit learning. We do not even have any sense of remembering when we activate a non-declarative memory. Indeed, procedural memory starts as

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<sup>297</sup> Jerry W. Rudy, *The Neurobiology of Learning and Memory*, (Massachusetts: Sinauer Associates, Inc Publishers, 2008), 174-182.

<sup>298</sup> Endel Tulving, *Element of Episodic Memory*, (New York: Oxford University Press, 1982), 8.

<sup>299</sup> Although philosophers distinguish memory a bit differently, the definitions are comparable. Their classification is experiential (personal), propositional (or factual) and practical memory (procedural). Experiential memories are those experienced from the first person perspective. Experiential memory involves imagery as the evocation of the experience takes place in the imagination. Propositional memory is the knowledge that we acquire and is not necessary personal acquaintance (parallel to semantic memory). This kind of memory does not require imagery. Sven Bernecker, *Memory: A Philosophical Study*, (Oxford University Press, Oxford, 2010), 13-15.

<sup>300</sup> Norman Malcolm, *Memory and Mind*, (London: Cornell University Press, 1977), 59.

<sup>301</sup> Researchers designated procedural acquisition a type of memory since it is involved in a process of learning and change that occur as a result of experience.

<sup>302</sup> Daniel L. Schacter, "Memory: Delineating the Core," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 24.

conscious process (declarative memory), when an act is done deliberately and exerts cognitive efforts. However, with practice, the information is retrieved automatically without any deliberate or conscious effort, then becoming a procedural memory.<sup>303</sup>

Non-declarative memory contains elementary, non-associative forms of behavioral plasticity such as classical conditioning, the priming effect, in addition to the acquisition of motor, perceptual, and cognitive skill, procedures, and habits. Classical conditioning is learning that occurs when one stimulus elicits another immanent stimulus while priming is unconscious memory that refers to a stimulus that is not explicitly remembered, but, after exposure, facilitates retrieval in a later situation. Examples of procedures, skills include reading, walking, biking, playing piano, swimming, and driving a car. Most of the skills are mundane and can be examined in terms of success and accomplishment or failure, but they cannot be judged in terms of truth or falsity.<sup>304</sup> The circumstances of when, where or how one acquires these skills are not important; only their performance is. Non-declarative memory is independent of the medial temporal lobe, the location where declarative memory is consolidated, and is intact in amnesic patients. Thus, amnesic patients can acquire motor, perceptual, cognitive skills and habits that are based on new learning even when they fail or are not able to acquire declarative memory.

### **Declarative memory: semantic and episodic memory**

Declarative memory (propositional) provides representations on the external world and internal states of the individual and is described in propositional or linguistic terms. This memory type is sometimes called explicit memory, since it consists of information that is consciously and

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<sup>303</sup> Gabriel Radvansky, *Human Memory*, (Boston: Pearson education, 2011),110-111.

<sup>304</sup>Larry R. Squire, "Memory Systems: A Biological Concept," in *Science of memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 340.



explicitly encoded and retrieved as the rememberer is aware that s/he retrieves information when s/he does so. Declarative memory can obtain knowledge in a single occasion and is expressed in variety of ways. Declarative memory addresses the relation between knowledge and reality. This is the type of memory that account for correspondence to accurate or distorted remembering since information can be compared with the external world and assessed for its truth value. Psychologists divide declarative memory into two subtypes: semantic and episodic memory.<sup>305</sup> These systems can react to the same sensory perceptions and correspond with each other during the different phases of encoding, storing, and retrieval. As was mentioned above, according to Tulving, semantic memory is embedded in episodic memory but not vice versa. Though both semantic and episodic memories are conscious, the kind of awareness varies by type.

### **Semantic Memory**

Semantic memory contains factual knowledge about the world—the concepts, ideas, rules, and language that form our general knowledge,<sup>306</sup> such as the idea that water is composed of one oxygen and two hydrogen atoms, or the fact that Oslo is the capital of Norway. Semantic memories are impersonal and have no association with a particular occasion of acquisition.<sup>307</sup> It does not refer to the time of learning, and the original context of acquisition is not important at the time of retrieval. In contrast to episodic memory, which is to be *remembered*, semantic memory is, according to Tulving, to be *known* as it is characterized by noetic awareness and is

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<sup>305</sup> Endel Tulving introduced the distinction between episodic and semantic memory. See Endel Tulving, “Episodic and Semantic Memory”, in *Organization of Memory*, ed. E. Tulving & W. Donaldson, (New York: Academic press, 1972), 381-403. See also Endel Tulving, *Elements of Episodic Memory*, (Oxford: Clarendon Press, 1983), 18.

<sup>306</sup> Daniel L. Schacter, “Memory: Delineating the Core,” in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 24.

<sup>307</sup> Endel Tulving, *Elements of Episodic Memory*, (Oxford: Clarendon Press, 1983), 63.

accompanied by feeling of familiarity.<sup>308</sup> Language plays bigger role in semantic memory than in episodic memory.

## **Episodic memory**

Episodic memory enables people to recollect personal past experiences. It is characterized by individual, first person experience and, as a result, is accompanied by auto-noetic awareness.<sup>309</sup> By auto-noetic awareness, Tulving refers to the subjective conscious awareness of remembering.<sup>310</sup> He aims at William James' description of memory as a subjective experience with the feeling of "warmth and intimacy."<sup>311</sup> Episodic memory is accompanied with an awareness that connects one's subjective past experiences to his personal identity.<sup>312</sup> It entails a sense of self and characterized by subjective belief in the veridicality of the memories. The subjective feeling of conscious awareness is associated with the nature of content and distinguishes this form of memory from others. Apparently, this subjective feeling derives from the specificity, the time, space and the contextual information. However, it is not clear what underlies this belief since there is no way of comparing the memory with the past but, nevertheless, this belief is a strong component in episodic memories.

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<sup>308</sup> Tulving, *Elements of Episodic Memory*, 65.

<sup>309</sup> Endel Tulving, "On the Uniqueness of Episodic Memory," in *Cognitive Neuroscience of Memory*, ed. Lars-Göran Nilsson & Hans J. Markowitsch, (Seattle: Hogrefe & Huber Publishers, 1999), 12.

<sup>310</sup> Daniel L. Schacter, *Searching for Memory: The Brain, The Mind, and the Past*, (New York: Basic Books, 1996), 17.

<sup>311</sup> This quotation is given by Endel Tulving. See Tulving, "On the Uniqueness of Episodic Memory," 12.

<sup>312</sup> According to cognitive scientists, semantic, episodic and autobiographical memories are conscious forms of memory. However psychoanalysts do not limit the unconsciousness to implicit/procedural memory and claim that episodic and autobiographical memories are "also unconscious, especially the memory of unassimilated experiences." See, Arnold H. Modell, *Imagination and the Meaningful Brain*, (Cambridge, Massachusetts: The MIT Press, 2003), 42. Memory systems are characterized by different modes of consciousness. Procedural memory is retrieved through un-noetic conscious (non-knowing), semantic memory associated with noetic consciousness (knowing), and episodic memory with auto-noetic consciousness (self knowing). Endel Tulving, "How Many Memory Systems Out There?" *American Psychologist*, 40, (1985): 388.

## **Episodic memory's specificity, temporality, and duration**

Episodic memory is characterized by specificity, by the ability to recall considerable details of what occurred a short time ago. It represents summaries of moments of conscious experience and is often represented in the form of visual images. Studies on brain damage demonstrate the close relationship between visual images and episodic memories. These studies show that inability to form visual images causes retrograde amnesia and the lack of specificity in memory.<sup>313</sup> Working in this vein, Martin Conway revises Tulving's concept of episodic memory. While Tulving categorizes all past personal memories as episodic, Conway limits episodic memory to representations of short time slices of experience.<sup>314</sup> For Conway, its temporal range does not extend beyond the sleep/wake cycle, which follows the consolidation of episodic memories into autobiographical ones.<sup>315</sup> Episodic memories do not include general or lifetime knowledge. Rather, the context of episodic memories is, according to Conway, today or yesterday.<sup>316</sup> Most episodic memories can be recalled at the end of the day, but do not endure for lengthy periods of time. Only a relatively small proportion of these memories remain accessible in long-term, after they become autobiographical memories. Episodic memory retains the particular occasion, time, and place of the remembered event and preserves the track of the temporal successions. Tulving

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<sup>313</sup> Martin Conway, "Episodic Memories," *Neuropsychologia*, 47, (2009): 2305- 2306. Martin A. Conway, "Memory and the Self," *Journal of Memory and Language*, 53 (4), 2005: 594–628.

<sup>314</sup> Martin Conway, "Sensory Perceptual Episodic Memories and its Context: Autobiographical Memory," ***Philosophical Transactions of the Royal Society of London. Series A: Mathematical, physical, and Engineering Sciences*, B 356, (2001):1380.** Helen L. William, Conway, M. A., & Baddeley, A. D., "The Boundaries of Episodic Memories," in *Understanding Event: From Perception to Action*, ed. Thomas F. Shipley And Jeffrey M. Zacks (Oxford; New York: Oxford University Press, 2008), 589–616.

<sup>315</sup> Martin Conway, "Sensory Perceptual Episodic Memories and its Context: Autobiographical Memory," **(2001):1380.**

<sup>316</sup> Because of its duration, it is distinguished from short term memory and working memory.

defines episodic memory as “mental ‘time travel’ through subjective time, from the present to the past and to the future—a feat that other memory systems cannot perform.”<sup>317</sup>

Because these memories preserve the temporal order, they thus retain a feeling of “beforeness and afterness.” Feelings about the order of time include also an anticipatory sense of an immediate future. Episodic memory is more susceptible to forgetting, manipulation, or change than are other memory forms such as semantic<sup>318</sup> or procedural memory. Episodic memories are susceptible to these changes because rememberers are prone to forget the original context and new information can modify these memories.

### **Function**

Episodic memory is the memory system that developed late in human evolution and only exists in adult humans; it does not exist in animals and in young children. What function does episodic memory serve? Long-term retention of specific episodic memories plays a key role in learning and the acquisition of knowledge. Psychologists such as Tulving and Conway have also highlighted how episodic memory support goal-making and planning for the future.<sup>319</sup> According to Conway, one of the main functions of episodic memories is to maintain and manage information relevant to goal processing, plan execution, motivation, and evaluations.<sup>320</sup> Episodic memory retains knowledge of sensory perceptions related to goals that can be rendered to actions. It also provides appropriate information and keeps track of progress on recent goal processing so that progress with goals and plans can be assessed. The content of memories

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<sup>317</sup> Tulving, On the Uniqueness of Episodic Memory, in *Cognitive Neuroscience of memory*, 13.

<sup>318</sup> Semantic memory is also susceptible for forgetting and distortion, like, for example, in the case of blocking names or in the tip of the tongue phenomenon, see Schacter, *The Seven Sins of Memory*, 189.

<sup>319</sup> Anterograde amnesics who cannot retain episodic memories also lack this function of planning and pursuits goals. Endel Tulving, “Episodic memory: From Mind to Brain,” *Annual Review of Psychology*, 53, (2002): 1–25.  
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<sup>320</sup> Martin, Conway, “Sensory–Perceptual Episodic Memory and its Context: Autobiographical Memory,” 1375.

adjusts to changes in the goals status. Therefore, it is not necessary to remember in a literal way what occurred, but, rather, in a relevant way. Remembering relevant information provides a means by which to check on recent progress towards current goals. By recent progress it means progress that the individual has made in the preceding minutes, hours, or days. By providing a detailed record of progress towards very specific goals, episodic memory forms the basis for future goals and for autobiographical memory.<sup>321</sup> Thus, goals are organized hierarchically, with goals lower on the hierarchy serving goals at higher levels of the hierarchy. Essential activities of the everyday are low goals in the hierarchy that serve long term goals.<sup>322</sup> For example, studying for a test is a short term goal which serves a long term goal such as graduating that, in turn, serves another long term goal such as getting a future job.

The high degree of short term specificity in episodic memories stems from the fact that these details help rememberer make plans about the future.<sup>323</sup> The ability to preserve and recall the temporal order of the day's events in backward and forward order, including an anticipatory sense of the immediate future,<sup>324</sup> serves the ability to be connected to our current goals and future plans. This constructive function of episodic memory allows individuals to simulate or imagine future episodes, or scenarios. Since the future is not an exact repetition of the past, simulation of future episodes requires a system that can draw on the past in a flexible manner that extracts and recombines elements of previous experiences. Yet rapid forgetting is also an important feature of episodic memories and plays a role in adjustment mechanism. Forgetting

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<sup>321</sup> Martin Conway, "Episodic Memories," 2306.

<sup>322</sup> Jefferson A. Singer and Peter Salovey, *The Remembered Self: Emotion and Memory in Personality*, (New York: the Free Press, 1993), 52 -53.

<sup>323</sup> For an illustration how future plans are correlated to specificity in autobiographical memories, see Williams, J. Mark G.; Thorsten Barnhofer, Catherine Crane, Dirk Hermans, Filip Raes, Ed Watkins & Tim Dalgleish, "Autobiographical Memory Specificity and Emotional Disorder," *Psychological Bulletin*, 133(1), (2007): 122 – 148.

<sup>324</sup> Martin Conway, "Episodic Memories," 2306. See also, Martin A. Conway, "Memory and the self," 594–628.

occurs because certain memories are relevant to longer-term goals and consequently to the future, whereas others are not relevant and are forgotten. Fulfilled goals can recede from our consciousness as resolved, but unfulfilled goals can motivate action for years.

### **From episodic memory to semantic memory**

Episodic and semantic memory systems are closely related and interact with one another. They do not derive from different sources but induce different forms of conscious representation which also invoke different degree of confidence. In episodic memory, the self is in the center of the memory, while in semantic memory, the self is not relevant or does not play an important role. Therefore, remembering produces stricter standards, and knowing produces more lenient criteria.<sup>325</sup> The distinction between semantic-episodic memories is not always clear. The transformation hypothesis suggests that semantic memory can be derived from episodic memory by a process of generalization.<sup>326</sup> General knowledge is gradually abstracted from episodic memories in the process of becoming more generic and conceptual.<sup>327</sup> Exactly how conceptual knowledge is abstracted from episodic memories is not known. But it is assumed that episodic elements are combined together to become more general by reducing specificity of the individual episodic memories and grouping them together in long-term memory to form a conceptual knowledge. Semantic memory incorporates the essential features of the original memories and can be accessed independently of episodic memory. This occurs, for example, when personal memories decrease in the specificity, lose their temporal and physical context, and become general knowledge. The formation of routines and schema not associated with specific or unique

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<sup>325</sup>J. M. Gardiner, *Episodic Memory and Autonoetic c.Consciousness: A First-Person approach*, in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, John p. Aggleton & martin A. Conway, (Oxford: Oxford University Press, 2002), 18.

<sup>326</sup>Gordon Winocur, and Morris Moscovitch, "Memory Transformation and Systems Consolidation," *Journal of the International Neuropsychological Society*, 17 (2011): 766–780.

<sup>327</sup>Schacter, *The Cognitive Neuroscience of Constructive Memory*, 131.

events serve as a good example for abstraction of general knowledge from episodic memory. The shift from initial reliance on episodic memories to conceptual knowledge may be a general feature of the acquisition of new knowledge. The abstracted semantic memory does not replace the initial episodic memory but these two forms of memory co-exist and interact with each other. We can also retain concurrently an episodic memory for a specific event and general conceptual knowledge of the event. On the other hand, episodic memory can get its meaning or be interpreted with reference to prevalent general knowledge that stems from semantic memory.<sup>328</sup> However, although the two memory systems interact, they are thought to be independent behaviorally, neurally and phenomenally, having distinct memory retrieval processes.<sup>329</sup> Episodic memory is represented in the hippocampus and semantic memory in extra-hippocampal structures.

### **From episodic memory to autobiographical memory**

Autobiographical memory is generally viewed as either an equivalent to, or as subsystem of episodic memory. Although the terms episodic and autobiographical memory are often used interchangeably, psychologists distinguish the two memory forms by duration and function. According to Conway, autobiographical memory is composed of episodic memories which were integrated in the conceptual knowledge of the self. He thus distinguishes between episodic and autobiographical memory with reference to the nature of their retention. While episodic memory is limited to recent, specified memories, autobiographical memory refers to the accumulation of

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<sup>328</sup> See below the section that deals with schemes and bias.

<sup>329</sup> Andrew P. Yonelinas, "Components of Episodic Memory: The Contribution of Recollection and Familiarity," in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, John p. Aggleton & martin A. Conway, (Oxford: Oxford University Press, 2002), 31.

personal memories.<sup>330</sup> Episodic memory retains highly detailed sensory perceptual knowledge of recent experiences for minutes and hours, while autobiographical memory retains information over weeks, month, years, decades and life span. Many of the episodic memories are mundane experiences and only a relatively small proportion of episodic memories are integrated into the long term memory. An even smaller proportion becomes an accessible part of autobiographical memory. That is, access to an episodic memory might be maintained over long periods of time when this memory is integrated into autobiographical memory. Episodic memories with stronger reference to the self are likely to integrate into autobiographical memory and then are involved in constituting the conceptual frame of the self, beliefs and attitudes.<sup>331</sup> Alternatively, conceptual knowledge organizes and integrates episodic memories that accord with the self and its goals, constituting autobiographical memories.<sup>332</sup>

Autobiographical memory retains knowledge of the self at a higher, more complex level of abstraction than episodic memory. It provides a basis for coherent long-term goals and plans that extend beyond a few days. Episodic memories become integrated with autobiographical memory if they are relevant to longer-term goals, these goal structures suppressing irrelevant knowledge. As Singer and Salovey claim, “A memory may lose or gain affective intensity depending upon its connections to an individual’s current goals rather than to goals originally served by the

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<sup>330</sup> Martin Conway, “Sensory Perceptual Episodic Memories and its Context: Autobiographical Memory,” **Philosophical Transactions of the Royal Society of London. Series A: Mathematical, Physical, and Engineering Sciences, B 356 (2001): 1375 -1384.**

<sup>331</sup> Hans J. Markowitsch and Harald Welzer use Norbert Elian’s sociological theory of civilization (in which he claims that historical and cultural developments change the behavior of the individuals) to interpret how autobiographical memory developed according to social changes. They maintain that in “societies with a static hierarchy of power,” there is no room for individualism, therefore they claim that autobiographical memory is a product of more modern, personal and individualistic societies. See Hans J. Markowitsch & Harald Welzer, *The Development of Autobiographical Memory*, (New York, Psychology press, 2010) 6-8.

<sup>332</sup> Martin, A Conway, “Sensory-Perceptual Episodic Memory and its Context: Autobiographical Memory,” in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, John p. Aggleton & martin A. Conway, (Oxford: Oxford University Press, 2002): 55.



remembered behavior.”<sup>333</sup> Also, according to Conway, episodic and autobiographical memory involve different subjective states of awareness. For him, “episodic memory supports recollection and familiarity whereas autobiographical memory supports feeling of knowing.”<sup>334</sup>

### **Different kinds of autobiographical memory**

Autobiographical memory varies in sensory-perceptual and temporal specificity. On the one hand, it is combined from abstract, conceptual, and general knowledge, while on the other, it consists of sensory perceptual specific information derived from single events.<sup>335</sup> Thus autobiographical memories cover periods ranging from minutes and hours to years, decades and a lifetime.<sup>336</sup> Memories that span long periods such as years and decades are the most abstract and conceptual because these memories contain generic knowledge enabling the evaluation of an entire time period. Such independent general information can be organized through temporal, spatial, or thematic frameworks, indicating, for example, a period of time such as when I was in high school or in college, lived in Europe, or worked at a hospital.<sup>337</sup> We have generic knowledge of a given period in relation to the self, which enables us to evaluate that period as

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<sup>333</sup> Jefferson A. Singer and Peter Salovey, *The remembered Self: Emotion and Memory in Personality*, (New York; the Free Press, 1993), 52.

<sup>334</sup> Martin Conway, “Sensory Perceptual Episodic Memories and its Context: Autobiographical Memory,” **Philosophical Transactions of the Royal Society of London. Series A: Mathematical, physical, and engineering sciences**, B 356, (2001): 1382.

<sup>335</sup> Helen L. William, Conway, M. A., & Baddeley, A. D., “The Boundaries of Episodic Memories,” in *Understanding Event: From Perception to Action*, ed. Thomas F. Shipley And Jeffrey M. Zacks (Oxford; New York: Oxford University Press, 2008), 589–616.

<sup>336</sup> Martin, A Conway, “Sensory-Perceptual Episodic Memory and its Context: Autobiographical Memory,” in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, John p. Aggleton & martin A. Conway, (Oxford: Oxford University Press, 2002), 56. **Martin A.** Conway, Pleydell-Pearce, Christopher W., “The Construction of Autobiographical Memories in the Self-Memory System,” **Psychological Review**, vol 107, (2000): 261-288.

<sup>337</sup> Helen Williams, Martin Conway, and Gillian Cohen, “Autobiographical Memory,” in *Memory in the Real world*, ed. Gillian Cohen and Martin Conway, (New York: Psychology press , 2008), 34.

whole. In short, general autobiographical knowledge frames and puts in context specific episodic memories,<sup>338</sup> and the combination of the two constitute a specific autobiographical memory.<sup>339</sup>

Autobiographical memory also varies in its epistemological status. It is composed of memories both from a person's experiences and also from more abstract, conceptual, autobiographical knowledge. Some autobiographical memories lack the sensory perceptual component and they become factual and semantic. These memories are composed of information such as the names of friends and colleagues, places where one has worked, towns lived in, schools attended, goals attained or abandoned, etc. Not all autobiographical memories are first experienced as events, since some of them stem from facts and events that took place in the past without us having any memories of them (such as of our own birth). Thus, not all autobiographical memories involve recall of previously experienced events, but recall can be invoked by photographs, objects, or from stories told by others even though only implicit feeling is associated.<sup>340</sup> Thus, autobiographical memories engage facts and general knowledge, but this semantic knowledge differs from semantic memory since it involves a stronger relation to the self.

### **Field vs. observer**

One prevalent distinction that researchers draw between types of visual autobiographical memories is the different perspective embedded in them— either a 'field' or 'observer' perspective.<sup>341</sup> With a field perspective, a visual autobiographical memory is associated with

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<sup>338</sup> Stephen J. Anderson & Martin A. Conway, "Representations of Autobiographical Memories," in *Cognitive Models of Memory*, ed. Martin A. Conway, (Sussex, Psychology press, 1997), 219.

<sup>339</sup> Martin A. Conway, et al., "Neurophysiological Correlates of Memory for Experienced and Imagined Events," *Neuropsychologia* 41, (2003): 334–340.

<sup>340</sup> Andrew R. Mayes and Neil Roberts, "Theories of Episodic Memory," in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, John p. Aggleton & Martin A. Conway, (Oxford: Oxford University Press, 2002), 87.

<sup>341</sup> Georgia Nigro and Ulric Neisser, "Point of View in Personal Memories," *Cognitive Psychology*, 15, (1983): 467-482. See also, Conway, "Episodic Memories," 2305- 2306.

recent memories and considered to preserve a person's original perspective. With an observer perspective, by contrast, an autobiographical memory appears to the observer from the outside.<sup>342</sup> The subject sees himself as if from a third-person, spectator's point-of-view,<sup>343</sup> detached from the experience. We tend to experience older, less specific memories from an observer perspective.<sup>344</sup> Whether a memory has a field or observer perspective also determines the degree of self-awareness that we possess and the types of feelings that we link to the remembered experience. When we have broader awareness, the perspective will be that of an observer; when we have a specific or definite awareness, the memory will likely have a field perspective.

Another factor distinguishing field from observer memories is our emotions. Field memories are generally emotional as we focus on how we felt in them. Alternatively, in observer perspective we refer to an experience less emotionally. This factor is essential since the emotion that we attribute to past experience determines how we relate to this experience and what we focus on. The observer perspective reflects the reconstructive nature of memory, and how autobiographical memory integrates general knowledge. Generic autobiographical knowledge and schemes reform older autobiographical memories, enabling us to relate to these memories from a greater distance and with new interpretative attitudes. Thus, the shift of perspective from first- to a third-person perspective demonstrates how autobiographical memories are dynamic and reconstructive.<sup>345</sup> Perspective determines the way a memory is constructed, and as Schacter writes, "this means that an important part of your recollective experience- whether or not you see yourself as a

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<sup>342</sup> Gabriel Radvansky, *Human Memory*, 226.

<sup>343</sup> Eric Eich, et al., "Neural Systems Mediating Field and Observer Memories," *Neuropsychologia* 47 (2009): 2239-2251.

<sup>344</sup> Daniel L. Schacter, *Searching for Memory: The Brain, The Mind, and the Past*, 21

<sup>345</sup> Eich, et al., "Neural systems mediating field and observer memories," 2239.

participant in a remembered event –is, to a large extent, constructed or invented at the time of attempted recall. The way you remember an event depends on your purposes and goals at the time that you attempt to recall it.”<sup>346</sup> The relationship between the self and memory come to include new interpretive attitudes, leading to the constructive characteristic of autobiographical memories.

### **Self, narrative and construction**

Autobiographical memory is shaped and formed by our past experiences and functions to ground the self in these memories; the retrieved information is recollected with a reference to oneself. This reference to oneself is combined from the present self and the self that was present in the past experience. In order to make sense out of experiences and make them compatible with self definition and personal identity, autobiographical memory (re)constructs narratives. Making these narratives derives from a variety of motivations and functions, such as constructing a narrative that accords with to one’s purposes and goals or, alternatively, constructing a narrative to compensate for unfulfilled or unsatisfied desires and goals.<sup>347</sup> The need for congruency<sup>348</sup> and accord between the self and memories might induce changes to both. For the self, it might lead to changes in the attitudes and beliefs, while for memories, it might lead to an inhibition of memories, misremembering, and revision. Thus, autobiographical memories, composed of a combination of past experiences and fictive narratives, underlie the continuity and stability of the

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<sup>346</sup> Daniel L. Schacter, *Searching for Memory: The Brain, The Mind, and the Past*, 21 -22.

<sup>347</sup> Jefferson A. Singer and Peter Salovey, *The Remembered Self: Emotion and Memory in Personality*, (New York; the Free Press, 1993), 47-48.

<sup>348</sup> Congruency occurs when the self and memories constrain each other. However, split between the self and memories can come about as a result of varieties of illnesses or injuries, like when damage to the frontal lobe brings about delusional beliefs and confabulation. In these cases, memories do not ground themselves and do not necessarily form a consistent sense of self. Thus, memories of the past are reconstructed and modified to create a reality that does not exist anymore or has possibly never been. See Armin Schnider, *The confabulating Mind: How the brain Creates Reality*, (Oxford: Oxford University Press, 2008).

self. The experience of remembering is accompanied with the belief that a memory is a more or less true replica of the original event, as well as the belief that the event is part of one's own past.<sup>349</sup> Thus, autobiographical memories are molded and invented to form a life story schema which is integrated in the formation of the self. This constructed nature of autobiographical memories means that they are intrinsically prone to error and in extreme cases may be wholly false, despite our spontaneous belief to the contrary.

### **Neuroanatomy**

The differences between non-declarative and declarative memory systems are also a matter of location and degree. Non-declarative memory relies on the cerebellum and basal ganglia, while declarative (explicit) memory depends on structures in the medial temporal lobe and within the temporal lobes. The important structures are the hippocampal formation, together with the adjacent parahippocampal and perirhinal cortices.<sup>350</sup> This memory form is damaged in amnesic patients.<sup>351</sup> The same chemical and cellular processes underlie both non-declarative and declarative memories.<sup>352</sup>

Indeed, it seems that the differences between non-declarative and declarative memory systems are minor at the neural level and these differences stem mainly from the number of synaptic connections. As was mentioned above, episodic memory evolved more recently than other systems, is probably unique to humans, and developed late in childhood. Its operations depend

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<sup>349</sup> Tulving, *Elements of Episodic Memory*, 127.

<sup>350</sup> Larry R. Squire, "Declarative and Nondeclarative Memory: Multiple Brain Systems Supporting Learning and Memory," in *Memory Concepts - 1993 Basic and Clinical Aspects*, ed. Per Anderson, Quivind Hvalby, Ole Paulsen, & bernt Hökfelt, (Amsterdam: Excerpta Medica, 1993), 4.

<sup>351</sup> Martin, Conway, "Episodic Memories," 2305.

<sup>352</sup> BSCS Biology: A Molecular Approach 9<sup>th</sup> Edition, (New York: BSCS Alex Rosenberg, 2006), 558. See also, Alex Rosenberg, "Lessons for Cognitive Science from Neurogenomics," in *The Oxford Handbook of Philosophy and Neuroscience*, ed. John Bickle (Oxford: Oxford University press, 2009), 152.

on semantic and other forms of memory. As a result, episodic memory shares neural mechanisms and cognitive processes with other systems, but in addition, originates from unique mechanisms and processes.<sup>353</sup>

There is overlap between the sites involved in representing facts and episodes. Hippocampus plays a critical role in encoding both memory types.<sup>354</sup> However, episodic memories are likely to contain more sensory information, more spatiotemporal and contextual references, and more reference to the self and its emotions.<sup>355</sup> Researchers also suggest that episodic memory depends on the frontal lobes in a way that declarative and other forms of memory do not. The localization of retrieval of semantic and episodic memories is different. In particular, semantic retrieval is localized to left prefrontal cortex and episodic retrieval to the right prefrontal cortex.<sup>356</sup> Episodic memory and autobiographical memory also have different neuroanatomical organization, being associated with different brain areas.<sup>357</sup> Episodic memories are represented in the occipital lobes, and in the posterior parts of the temporal lobes, whereas autobiographical memory is represented in more anterior locations. Autobiographical memory is distributed over wide area in the brain including networks in frontal, temporal and occipital lobes as well to midbrain structures in hippocampus, amygdale, fornix and thalamus.<sup>358</sup> Therefore, it is assumed that these two systems are not quite the same.

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<sup>353</sup> Tulving, "On the Uniqueness of Episodic Memory," 13.

<sup>354</sup> Squire, L. R., and Knowlton, B. J., "Memory, Hippocampus, and Brain System", in *The Cognitive Neuroscience*, ed. M. S. Gazzaniga, (Cambridge: MIT Press, 1995), 825-837.

<sup>355</sup> Andrew R. Mays, "Exploring the neural Bases of Complex Memory," in *Neuropsychology of Memory*. Ed. Larry R. Squire & Daniel L. Schacter, (New York: The Guilford Press, 2002) ,26.

<sup>356</sup> Hans J. Markowitch, "Neuroanatomy of Memory," in *Oxford Handbook of Memory*, 478.

<sup>357</sup> Conway, *Sensory-Perceptual Episodic Memory and its Context: Autobiographical Memory*, 54.

<sup>358</sup> Conway, "Episodic Memories," 2305.

## Why deal with autobiographical memory

Out of the multiple functions and kinds of memory, I focus here on episodic memory and especially autobiographical memory. Indeed, episodic memory formation is relevant to other memory systems as well because they all share common processes like encoding, storing, and retrieval. Moreover, different memory systems closely interact. However, there are four main reasons to concentrate on episodic memory.

First, different kinds of memory behave differently. While brain substrates of procedural memory remain unchanged and relatively permanent over a life cycle, the brain substrates of declarative memory, which includes episodic (autobiographical) and semantic memory, appear to change over time. Autobiographical memory is even more susceptible to manipulation<sup>359</sup> and to various kinds of errors than semantic memory.

The second reason concerns the relation of memory to veridicality. Memory systems involve different kinds of knowledge. For instance, procedural memory is the implicit acquisition of non-symbolic skills that does not require awareness and stems from accumulated practice and experience. Thus, issues of truthfulness are not relevant to this type of memory. In contrast, episodic and semantic systems are declarative and propositional as they are kinds of knowledge that can be verified as right or wrong.

The third reason relates to differences between episodic and semantic memory. Semantic memory is factual knowledge about the world, concepts, rules, and language, which does not refer to the time or context of learning. In contrast, episodic memory is accompanied by the experience of remembering. It identifies the specific time, place, the context in which the

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<sup>359</sup> Tulving, *Elements of Episodic Memory*, 26.

experience occurred, and, as a result, is the only type of memory which provides an epistemic authority on our own past. Semantic memory also entails truthfulness, but we share this knowledge with others.

Fourth, episodic memories are the only ones with direct reference to the past. As Tulving points out, “episodic memory is the only form of memory that, at the time of retrieval, is oriented toward the past: retrieval in episodic memory means ‘mental time travel’ through and to one’s past. All other forms of memory, including semantic, declarative and procedural memory, are, at retrieval oriented to the present.”<sup>360</sup> On the other hand, it might seem that procedural memory is realized in the present but also oriented towards the future. We learn skills to exercise them more effectively in the future.

### **Cognitive neuroscience of constructive memory**

Both episodic and autobiographical memories exhibit forgetfulness, errors, inaccuracy and distortions. These malfunctions are of the utmost importance for memory researchers because they provide evidential basis for studying the extent to which memory is not a literal reproduction of the past, but, rather, a generative and constructive process.<sup>361</sup> The fact that memory is a constructive process provided further evidence that episodic and autobiographical memory’s operation do not necessary represent past experiences accurately but serves additional complex functions.

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<sup>360</sup> Tulving, On the Uniqueness of Episodic Memory, 15.

<sup>361</sup> Daniel L. Schacter and Donna Rose Addi, The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future, *Philos Trans R Soc Lond B Biol Sci.* 362(1481), (2007): 773.



Researchers frequently characterize memory malfunctions with the Constructive Memory Framework (CMF), which deals with memory distortions where human memory fails to reproduce reality. There are various factors that affect, modify and distort episodic and autobiographical memories. These factors include age related memory loss, Alzheimer disease, or brain injuries. However, as was mentioned above, I do not deal with memory disorders, the states where memory goes wrong, but, rather, with autobiographical memory distortions that take place all the time and are considered as normal and even necessary. Due to their constructive nature, episodic and especially autobiographical memories are susceptible to various kinds of recurrent distortions.<sup>362</sup> Examples of these distortions include false recognition, confabulation, bias, misattribution, error, illusion, and suggestibility.<sup>363</sup> These distortions derive from the subject's attention level, beliefs, goals, attitudes, motivations, intentions, expectations, senses of self, emotional state, and age. They also derive from cultural values, social demands,<sup>364</sup> the need to form coherency, and likewise.

Constructing a memory is a complex operation of multiple, sometimes contradictory informational components. Because multiple sources of conflicting information confront the self, various defense and strategic mechanisms (such as ignoring, repression, suppression, compensation, confabulation and rationalization) are invoked to form consistent interpretations. Although these defensive mechanisms generate consistent interpretations, they do so at the cost of inducing memory distortions. Researchers claim that some types of memory distortions emerge as byproducts of memory's constructive and adaptive nature. Ironically, they claim that

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<sup>362</sup> Daniel L. Schacter, "Memory Distortion: History and Current Status," in *Memory Distortion: How Minds, Brains, and Societies Reconstruct the Past*, ed. Daniel L. Schacter, (Cambridge: Harvard University Press, 1995), 10.

<sup>363</sup> Daniel L. Schacter, Kenneth A. Norman and Wilma Koutstaal, "The Cognitive Neuroscience of Constructive Memory", *Annual Review of Psychology*, vol 49,(1998): 289 -318.

<sup>364</sup> Maurice Halbwachs, *The Collective Memory*, trans: Lewis A. Coser, (Chicago: University of Chicago Press, 1992).

memory malfunctions reflect a healthy memory system—not a memory disorder or flawed system. For example, Schacter and other researchers show that patients with memory disorders do not have increase but instead a reduction in errors such as false recognition.<sup>365</sup> Likewise, people with left frontal lobe damage show a reduced ability to deny, rationalize, fills memory gaps, or confabulate.<sup>366</sup> This evidence demonstrates that false recognition and other memory malfunction are manifestations of memory’s constructive processes. Can we infer from this that memory disorders which decreases memory’s constructiveness also reduce adaptive competence?

Thus, memory malfunctions are an inherent part of healthy memory operations and do reflect their constructive processes<sup>367</sup> in which variety of factors both intrinsic and extrinsic to the experience itself determine the memory. In other words, different processes interact and intervene to form the content of a memory, only part of which stems from the original experience. Brian Smith describes this complex process of how new perceptions are unconsciously integrated into memory. He illustrates how memories have both dynamic and transient states in order to show that memories are in perpetual state of modification that occurs without us noticing these changes or being able to compare memories to the original experience:

“Not only is it impossible to compare our memories with the events of which they are the memories; but because the present is, as it were, always slipping away from us into the past we cannot even compare our memories with what purport to

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<sup>365</sup>Daniel L. Schacter and Donna Rose Addi, “The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future,” 773.

<sup>366</sup> Michael S. Gazzaniga, *Who’s in Charge? Free Will and the Science of the Brain*,(New York: Harper Collins Publishers, 2011), 98.

<sup>367</sup> Daniel L. Schacter and Donna Rose Addi, “The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future,” 773.

be the effects of the original events (or, more properly, with our inferences from those ‘effects’). For what I am comparing must always be, not the memory itself but my memory of that memory. Suppose that today I remember building, a short while ago, a castle in the sand. Tomorrow I go to the beach and there it is. I say ‘Yes just as I remembered it yesterday’. But how do I then *know* it is just as I remembered it yesterday? The sight of the sand castle itself may well influence my memory of my previous remembering.”<sup>368</sup>

When current perceptions do not correspond to our previous ones, the earlier memory adjusts in light of the later encounter. As a result, the old memory is swallowed by new impressions. Usually, the earlier memory adjusts so quickly that we are not aware of the adjustment or even that there was an incongruity. Even though this adjustment process occurs continually, episodic and autobiographical memories are endowed with subjective state of awareness that engenders a strong belief and a feeling of confidence in the reliability of our memories. However, there is no necessary correlation between this confidence and the reliability of the memory. Often, people can have high confidence not only in inaccurate memories, but also in memories of events that never happened. Emotional attachment does not indicate the veracity of the memory either since people can feel strong attachment to inaccurate memories as well.<sup>369</sup> When we recollect, we are not conscious of these memory reconstructions. This reconstruction process is inaccessible for us even if we dwell deeply on the process of recalling, since even reflection does not necessarily lead to a better understanding of the components involved in the process of memory

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<sup>368</sup> Brian Smith, *Memory*, (London: George Allen & Unwin LTD, 1966), 27. The italic is in original.

<sup>369</sup> Steven Jay Lynn, et al., “Rendering the Implausible Plausible: Narrative Construction, Suggestion and Memory,” in *Believed in Imaginings: The Narrative Construction of Reality*, ed. Joseph de Rivera & Theodore R. Sarbin, (Washington: American Psychological Association, 1998), 133. See also, Elizabeth Loftus, “Our Changeable Memories: legal and Practical Implications,” in *Nature Reviews: Neuroscience* (2003): 231.

construction. In addition, current brain imagining studies of truth-false recognition indicate that accurate and inaccurate memories depend on some of the same underlying brain regions.<sup>370</sup>

Thus, the close relationship and the difficulty of separating between real and false components of memory may stem from the fact that overlapping brain regions support both true and false memories.

### **The ways that memories can be constructed**

Psychologists list a variety of memory distortions. Schacter, for example, has proposed the idea that memory's imperfections can be classified into seven basic categories or 'sins',<sup>371</sup> ranging from instances of absent-mind and forgetting to misattributions, false recognition, and suggestibility.<sup>372</sup> In the following, I will delineate some of the central causes that effect and distort memories.

### **Forgetting**

The most prevalent source of memory fallibility or impairment is due to forgetting.

Neuroscientists debate whether complete forgetting is possible, or whether forgetting stems from the inaccessibility to retrieve memories. If complete forgetting does not exist, then forgetting can mean either that information was not stored in the long term memory,<sup>373</sup> or alternatively, that a storage failure occurred with inability to retrieve stored information due to absence of a retrieval

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<sup>370</sup> Schacter and Addis, "The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future," 773. Schacter and Addis, "Constructive Memory in the Human Brain Phi," *Trans. R. Soc. B* (2007). Daniel L. Schacter, Kenneth A. Norman, Wilma Koutstaal, "The Cognitive Neuroscience of Constructive Memory," in *False Memory Creation in Children and Adults: Theory, research and implications*, ed. David F. Bjorklund, (New York: L. Erlbaum, 2000), 144.

<sup>371</sup> Daniel Schacter, *The Seven Sins of Memory: How the mind Forgets and Remembers*, (Boston: Houghton Mifflin Company, 2001).

<sup>372</sup> Schacter and Addis, "The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future," 773.

<sup>373</sup> Elizabeth, F. Loftus, "Forgetting: The Fate of Once learned , but "Forgotten" Material," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 321.

cue.<sup>374</sup> Forgetting also refers to states when memories fade over time and fall “into the bottomless abyss of oblivion,” as William James phrases it,<sup>375</sup> and even if memories remain, they become more generic over time. Most forgetting, however, stems from informational interference, when new information interfere with old information (retroactive interference), or when old information inhibits the ability to remember new information (proactive interference).<sup>376</sup> Schacter, for example, characterizes three general types of forgetting: 1) transience, which designates the decreasing accessibility of information over time, 2) absent minded, which occurs when the lack of attention led to shallow encoding and 3) blocking, which occurs with the temporary inaccessibility of stored information.<sup>377</sup> In terms of neurobiology, forgetting is due to the weakening of synaptic connections that store the information. Thus, whether forgetting is total or partial, it can vary, and is involved in all other types of distortions.

## **Bias**

Bias is an inclusive concept that encompasses a variety of distortions of encoding due to relying on previous knowledge. Both perception and encoding depend on categorizations, schemas, attitudes, perspectives, and the availability of preexisting knowledge. This preexisting knowledge takes the form of guidelines or scripts for events of daily life, which guide our attention, help us perceive, organize, process and interpret information. In daily life, we use scripts for events such as going to a restaurant, cinema, hotel, office. For example, the script for

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<sup>374</sup> Cue is either an internal or external stimulus that triggers a memory. I will elaborate on the roll of cues in the process of memory retrieval later.

<sup>375</sup> William James, *The Principles of Psychology*, vol I, Chapter xvi, 605.

<sup>376</sup> Michael Gazzaniga, Todd Heatherton, Diana Halpern, *Psychological Science*, (New York: W.W. Norton & Co., 2010), 314. See also Loftus, E.F. & Pickrell, J.E. “*The Formation of False Memories*,” *Psychiatric Annals*, 25, (1995): 720.

<sup>377</sup> Schacter, *Sevens Sins of Memory*, 2001. See also Daniel L. Schacter and Chad S. Dodson, “Misattribution, False Recognition and the Sins of Memory,” in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, John p. Aggleton & Martin A. Conway, (Oxford: Oxford University Press, 2002), 71 -72.

going to a restaurant follows a specific etiquette: first, you enter the restaurant, then wait for the host to sit you in a table, after which you get a menu, order a meal, eat it, ask for a check, pay and tip the server and so forth. Having these preexisting scripts makes the world more predictable, allowing expectations to be formed of how things will unfold and facilitating the handling of unexpected events. With no supporting schema, the encoding of an event will generally be poor since this experience will have not fit with prior knowledge that enables good understanding of the experience.

However, schemes and preexisting knowledge may also alter or distort our memory<sup>378</sup> since schema, while helping us perceive, also yields selective encoding and recalling.<sup>379</sup> This selectivity occurs because schemas filter perceptions of events, infusing the knowledge base into the encoding of an event. Knowing the likely sequence of an upcoming event leads us to expect a specific structure and to incorporate our expectations into a new memory—even when the expected event did not occur.<sup>380</sup> We pay less attention to familiar situations and falsely interpolate typical expectation even when they did not take place. We are unaware that we encode and interpret events through prevailing knowledge. Thus, the nature of memory is constructive since it relies on previous knowledge that was not part of the event.<sup>381</sup> Schemes help

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<sup>378</sup> Schacter, *Searching for Memory: The Brain, The Mind, and the Past*, 102.

<sup>379</sup> Bartlett is known for introducing the term Schema and to refer to an encoding act as a sieve. F. C. Bartlett, *Remembering: A Study in Experimental and Social Psychology*, (Cambridge: Cambridge University press, 1932), 66. Alba, J., W., & Hasher, L., "Is Memory Schematic?" *Psychological Bulletin*, 93, (1983): 203-231.

<sup>380</sup> Schacter, *Searching for Memory*, 102

<sup>381</sup> Ulric Neisser, *Cognitive Psychology*, (New York: Appleton Century Crofts, 1967), 285. Also cited in Daniel L. Schacter, "Memory Distortion: History and Current Status," in *Memory Distortion: How Minds, Brains, and Societies Reconstruct the Past*, ed. Daniel L. Schacter, (Cambridge: Harvard University Press, 1995), 8-10.

encode familiar events, however, experiences that violate schemas might invoke a very good encoding since we pay more attention to unexpected violations of schemata.<sup>382</sup>

### **Retrospective bias**

Retrospective bias, a subtype of bias, refers to the unconscious retrospective reconstruction of the past according to current knowledge, schemes and beliefs.<sup>383</sup> Schemes and biases not only help us encode experiences but also reconstruct parts of past experiences that cannot be remembered. This process may integrate aspects of a schema into the memory of an event, even if these aspects did not occur, because we expect these regular schematic features. For example, watching a film, a person may recall seeing a weapon such as a knife in a murder scene, even if there was none because existing schemas suggest that murder scenes almost always contain a weapon.<sup>384</sup> Memories are also edited in the light of later experiences and reconstructed to conform current beliefs and attitudes.<sup>385</sup> Retrospective bias occurs when people make retrospective judgments about the past or when there is inconsistency between past and present knowledge.<sup>386</sup> In order to achieve consistency, we make retrospective revisions, changing our memories of the past according to current knowledge, beliefs, ideology, attitudes, feelings, and perspectives. People, for example, incline to see their past views much closer to their current views and opinion as they reconstruct the past in order to match it to the present.<sup>387</sup> A memory of

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<sup>382</sup> C. J., Brainerd, and V. F. Reyna, *The Science of False Memory*, (Oxford: Oxford University press, 2005), 63. See also, Kleider, H.M., Pezdek, K., Goldinger, S.D., & Kirk, A. "Schema-Driven Source Misattribution Errors: Remembering the Expected from a Witnessed Event," *Applied Cognitive Psychology*, 22, (2008): 2.

<sup>383</sup> Helen Williams, et al., "Autobiographical Memory," in *Memory in the Real World*, ed. Gillian Cohen and Martin Conway, (New York: Psychology Press, 2008), 78. See also Alba, J., W., & Hasher, L., "Is Memory Schematic?" *Psychological Bulletin*, 93,(1983): 203-231.

<sup>383</sup> Schacter, *Searching for Memory*, 102

<sup>384</sup> See for example, Kleider, H.M., Pezdek, K., Goldinger, S.D., & Kirk, A., "Schema-Driven Source Misattribution Errors: Remembering the Expected From A Witnessed Event," *Applied Cognitive Psychology*, 22, (2008): 1–20.

<sup>385</sup> Helen Williams, et al., "Autobiographical Memory," 78.

<sup>386</sup> Schacter, et al., "The Cognitive Neuroscience of Constructive Memory," 147.

<sup>387</sup> Schacter, *Searching for Memory*, 105 -106.

an outcome of an event, for example, suppresses and conceals the process of our attitudes, feelings, and opinions that we went through before we knew what the outcome would be because, in retrospect, people tend to see an outcome as inevitable and to repress or forget what they actually thought about at the time. The present is integrated unconsciously in the way we recall the past. Retrospective bias can be problematic when we adjust the past experiences to the current state since these distortions reduce the range of feelings, attitudes that encompassed the original experience. Although it has these problematic implications, retrospective bias plays a role constructing a unitary sense of self, reconciling the past with the present, the subject of the next section.

### **Retrospective bias in the service of the ego**

We tend to view ourselves in a biased manner as our self presentation is shaped by social and cultural conceptions, phase of life, job and age processing, (old people have different biases than young people have).<sup>388</sup> In addition, retrospective bias can serve additional purposes such as supporting one's positive self-perception in self-enhancement bias. We represent the remembered experiences in a way that benefits our current perspectives, needs and ideologies. We view ourselves positively and therefore tend to reconstruct and distort the past in order to maintain a more favorable view of the current self.<sup>389</sup> People also tend to attribute more control to themselves, representing random outcomes as stemming from their choices. Thus, people

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<sup>388</sup>Michael Ross, "Relation of Implicit Theories to the Construction of Personal Histories," *Psychological Review*, vol 96, (1989): 341 -357.

<sup>389</sup>Shelley Taylor and Jonathon Brown claim that psychologically healthy people maintains positive misperceptions of their selves rather than having a close contact with reality. These scholars resist the conventional view that accurate perception of reality is a sign of a healthy person, instead claiming that positive distortion of the self is more adaptive. See Taylor, S. E. & Brown J. D., "Illusion and Well Being: A social psychological perspective on mental health. *Psychological Bulletin*," 103, (1988): 193-210.



over-emphasize the role of their skills, insights, and plans in their success rather than to coincidence and luck.<sup>390</sup> According to Michael Ross, people adopt one of two implicit theories to guide how they recall and organize personal memories over time—either through the self’s perceived transformation over time, or with its stability. In other words, we construct the past as the same or different from the present. The tendency to represent the past as different from the present happens for those who, for example, want to highlight their self-improvement or to elevate the past in the light of the deteriorating present. Alternatively, attitude towards stability reflects the willingness to see ourselves consistent. Overall, according to Ross, people tend to exaggerate and fabricate the extent to which their lives have either changed or remained the same.

### **Interpretations**

Interpretation plays an essential role in determining what memory will represent. Relying on schemas, the process of interpretation goes beyond actual experiences; interpretation can reduce, enhance, or modify an experience through elaboration, explanation, justification, and reasoning. Interpretations sift and conceal details which were not associated with the selected meaning.<sup>391</sup> Thus, people remember experiences according to the meaning they assign to them, a process of reasoning that might lead to remembering false information.

### **Mood dependent memory**

Mood at time of encoding and recall also influences our memories as our emotional state shapes what we will tend to remember. Remembering sad memories is more likely during sadness, and

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<sup>390</sup> Jefferson A. Singer and Peter Salovey, *The Remembered Self: Emotion and Memory in Personality*, (New York; the Free Press, 1993), 149.

<sup>391</sup> C. J., Brainerd and V. F. Reyna, *The Science of False Memory*, (Oxford: Oxford University press, 2005), 60 -64.

remembering happy memories occurs during time of happiness. Present mood also influences our perception of past memories. For example, if a person experiences pain in the present, it is likely that he will recall past experiences and attribute to them a similar level of pain. In another example, having a fight with a friend might evoke negative emotions and memories towards this person. Emotional states like depression invoke similar past experiences such as suffering and failure, and will result in a negative self-conception.<sup>392</sup> However, memory is mood dependent not simply because we will tend to remember sad memories during sad states, but also our whole perspective modifies the way we see other memories or remember past events which were not necessarily sad at the time. We alter and reconstruct our memories to match our current mood because this mood influences the way we recall the past. The mind mixes current feelings with a past memory, creating a whole new experience of the event.<sup>393</sup> Moreover, when new information is encoded, this process might trigger associated information or memories which are then blended with the new memory.

### **Source amnesia**

Source memory “refers to the processes that allow people to remember when, where, and how a memory was acquired.”<sup>394</sup> Remembering in cognitive science refer to retrieval of information, however not every retrieval information remembering. Remembering is a retrieval of information associated with a specific past event<sup>395</sup> and an important component of it is recalling the source information. Recalling the source of information distinguishes between remembering from knowing, another form of retrieval. When we recall the source of information and have a sense

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<sup>392</sup> Rolles, E. T., *Emotional Explained*, (Oxford: Oxford University Press, 2005).

<sup>393</sup> Richard Restak, *The Naked Brain: How the Emerging Neurosociety is Changing How We Live, Work and, Love* New York : Harmony Books, 2006).

<sup>394</sup> Schacter, *Memory Distortion*, 14.

<sup>395</sup> Andrew P. Yonelinas *Remembering: Defining and Measuring*, in *Science of memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007),233.

of self in relation to an experience, this experience, when retrieved, becomes an episodic memory and when we do not recall the source of information this experience is defined as knowing, and marks semantic memory. Thus, remembering and knowing are two different forms of awareness, two ways of accessing and relating to the past. While remembering is personal, detailed, and implies a specific relation between past and present, knowing is less personal and occurs when we are familiar with a piece of information but do not remember specific details about its acquisition. Knowing does not convey the feeling of re-experiencing, rather gives the knowledge of the existence of the experience. The remembering-knowing distinction also depends on how we attend an event in the first place, whether it was consciously encoded or not, but also influenced from the way we retrieve it.<sup>396</sup> Indeed, much information that we would spontaneously categorize as memories function as knowledge because we may know many details about ourselves but do not remember experiencing or first perceiving these details. While in knowing, the source of information is not relevant to the knowledge, in episodic memory, the information's source is an integral part of the memory.

Source amnesia in episodic or autobiographical memory occurs when we confuse the source of an experience (where, when and how the experience was obtained) and mistakenly misattribute it to a different origin.<sup>397</sup> Retrieving fragments of an episode but not recollecting how or when the fragments were acquired can result in various kinds of memory distortions such as fusing information and components from different memory sources. People forget the source of the information and confuse the original and new information. Source amnesia can also lead to an inability to distinguish between imagined and actual events. As Schacter claims, "the ability to

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<sup>396</sup> Schacter, *Searching for Memory: The Brain, The Mind, and the Past*, 25.

<sup>397</sup> Johnson M. K., Hashtroudi S., Lindsay D.S, "Source Monitoring," *Psychological Bulletin*, 114, (1993): 3-28.

recollect source information lies at the heart of our ability to distinguish memories from fantasies and other products of our imagination.”<sup>398</sup> Memories of imagined scenarios or events become integrated into our autobiographical memories as we forget their original source.<sup>399</sup> We become convinced that our memories represent events that we had experienced, when really these memories actually derived from an imaginative source.

Unintentional plagiarism (implicit memory) serves as example of source amnesia. Implicit memory is the non-conscious retrieval of information without being aware that the information is relied on or derived from past experiences.<sup>400</sup> That is, unconscious plagiarism is generated when we forget the real source of an idea and misattribute it to ourselves. As a result, we can believe that an idea is novel and ours when we have already encountered it. Thus, we attribute novelty to something familiar which we have encountered somewhere else but forgot about that. Déjà vu is another example of a similar distortion that shows a symbiotic relationship between reality and imagination. Déjà vu occurs when one misattributes a current experience to the past,<sup>401</sup> resulting in a feeling of strong familiarity with the experience. Source amnesia, when in combination with other factors, produces a variety memory distortions such as misattribution, misidentification, imagination inflation—the topic of a later section.<sup>402</sup>

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<sup>398</sup> Schacter, *Searching for Memory* 116.

<sup>399</sup> Schacter, *Searching for Memory*, 114.

<sup>400</sup> Schacter, *Searching for Memory*, 161-191.

<sup>401</sup> Schacter, *The Seven Sins Of Memory*, 89.

<sup>402</sup> Schacter, et al., “The Cognitive Neuroscience of Constructive Memory,” 134. Johnson M. K., Hashtroudi S., Lindsay D.S, “Source Monitoring,” *Psychological Bulletin*, 114, (1993): 3.

### **Semantic association and gist-based distortion**

According to network models, each neuronal node connects to many other nodes and when one node is activated, it is likely that associated nodes will be activated as well.<sup>403</sup> This occurs, for example, in gist-based distortion. Gist-based distortion derives from failure to remember distinctive features of different but similar or overlapping experiences. Substantial similarity between experiences produces common meaning and, as a result, might bring about inability to separate these distinct experiences, binding them as a unified memory.<sup>404</sup> Though the semantic meaning of these memories may remain the same, the specific features of the experience become blurred and distort the experience.<sup>405</sup> Thus, the inability to distinguish between real experienced information and relying on general gist (semantic association) can bring about false recognition. Semantic intrusions can also refer to the false recall of information that one never experienced but is invoked because it is related to experiences that took place.<sup>406</sup> Often, repeated events blend into each other as they become indistinguishable and absorbed into a generalized memory event.<sup>407</sup> Indeed, unique events are usually better remembered than repeated ones.

### **Misattributing and False Recognition**

Misattributing refers to when information from different sources combine to form a synthesized memory. It can derive from semantic overlap, source confusion, failure to distinguish between

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<sup>403</sup> Michael Gazzaniga, Todd Heatherton & Diana Halpern, *Psychological Science*, 3<sup>rd</sup> edition, (New York: W.W. Norton & Company Ltd, 2010), 302.

<sup>404</sup> Schacter and Addis, "The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future, 773.

<sup>405</sup> Schacter, et al., "The Cognitive Neuroscience of Constructive Memory," 134-135.

<sup>406</sup> C. J., Brainerd, V. F. Reyna, *The Science of False Memory*, (Oxford: Oxford University press, 2005), 27.

<sup>407</sup> Helen Williams, et al., "Autobiographical Memory," 40.

different memories, or the implicit association between similar but distinct memories.<sup>408</sup> For example, it can arise because of limitations in what is encoded at an event. It can happen in a different direction, when we falsely attribute a memory to our imagination, when this memory is a true memory, or, alternatively, when we attribute an imagined scenario to our memory. It refers, in other examples, to attributing the wrong time or place to a memory or to remembering events that never happened.

### **Post event misinformation**

Post event information can affect the way one remembers past events.<sup>409</sup> At the time of retrieval, the past is reconstructed with reference to new information, experiences, or environment. When a person stores an experience but later encounters contradicting information, a process of adjustment occurs. Partial or entire internalization of the later information takes place and changes the original representation.<sup>410</sup> This process of post event memory adjustment occurs non-consciously and we remember the combined memory after the integration process is complete.<sup>411</sup> Sometimes, the original and the later information are both stored, but the person remembers only the second information. Joseph LeDoux illustrates this process, how a memory changes and is reconstructed during a retrieval process. He gives an example of a situation where someone goes to a court to testify about a crime that he witnessed. On the day of the crime, the

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<sup>408</sup> Daniel L. Schacter and Chad S. Dodson, "Misattribution, False recognition and the Sins of Memory," in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, John p. Aggleton & Martin A. Conway, (Oxford: Oxford University Press, 2002), 72 -73.

<sup>409</sup> Elizabeth F. Loftus, & Pickrell, J.E., "The Formation of False Memories," *Psychiatric Annals*, 25, (1995): 720-725.

<sup>410</sup> Elizabeth, F. Loftus Forgetting: The Fate of Once learned, but "Forgotten" Material," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 321. See also Elizabeth Loftus, "Our Changeable Memories: Legal and Practical Implications," in *Nature Reviews: Neuroscience*, (2003): 231.

<sup>411</sup> Loftus, for example, investigates whether providing misleading information at retrieval distorts eye-witness testimony. Elizabeth F. Loftus "Our Changeable Memories: Legal and Practical Implications," in *Nature Reviews: Neuroscience* (2003): 231.

person gives his description of what happened to the police, who then take a record of his experience. However, a few days later when he goes to the court, he tells something completely different to the judge, a description which matches what he read in the newspaper.<sup>412</sup> As he read the article about what happened, he modified and updated his memory about the event. After this modification, it remains hard to distinguish what actually happened from what was incorporated through post event information. Joseph LeDoux provides another example, illustrating what occurs when we meet someone at a party and form a positive first impression, but when later find out that he is a murderer, our memory is immediately revised. In light of new information, we might even remember opposite things and tell ourselves that from the first second we noticed that something was suspicious about this person. In these ways, the current environment determines our memories and perspectives.

### **Suggestibility**

Suggestibility is another kind of distortion that partially connected source amnesia and misattribution. Both misleading post event information and suggestive investigation can interfere with accurate recollection of an actual event, leading to incorporation of misleading information from external sources into personal memories and thereby fostering false memories.<sup>413</sup> People are more prone to suggestive influences when they cannot fully recall an event and what is suggested to them seems plausible.<sup>414</sup> Misleading information can be acquired through reading of

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<sup>412</sup> Schacter and Addis, "The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future, 773. Daniel L. Schacter & D. R. Addis, "Constructive Memory in the Human Brain," *Phi*, Trans. R. Soc. B (2007). Schacter, et al., "The Cognitive Neuroscience of Constructive Memory," 144.

<sup>413</sup> Stephen Lindsay, "Misleading Suggestions Can Impair Eyewitnesses Ability to Remember Event Details." *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol 16, 6 1990): 1077-1083. Schacter, *Seven Sins of Memory*, 113.

<sup>414</sup> Steven Jay Lynn, Judith Pinter, Jane Stafford, Lisa Marmelstein & Timothy lock, "Rendering the Implausible Plausible: Narrative Construction, Suggestion and Memory," in *Believed in Imaginings: The Narrative Construction*

a newspaper, watching news, being interviewed, or when sitting in courthouse during a trial.

Recovered memory therapy (RMT) offers numerous examples of misguided information.<sup>415</sup>

Police interrogations and scientific experiments can also induce people to incorporate suggested information about events that never happened into memories.<sup>416</sup>

In RMT, psychotherapists, who subjects believed were treating repressed memories of childhood sexual abuse, developed instead False Memory Syndrome (FMS) in their patients.

Psychotherapists, while seeming to guide the restoration of repressed memories, actually generated false traumatic memories. This study of post event suggestive information has important implications in police interrogations, when suggestive questions may alter people's memories and influence eyewitness testimony. For instance, leading questions often function as cues that interfere with the process of retrieval, distorting memory through the misinformation effect or by mixing misleading with the original information.<sup>417</sup> Under pressure, suggestive guidance is even more distortive because subjects feel the need to satisfy and please the interrogator, as is shown in many legal cases. Overall, studies have shown that guided misinformation can very easily blur the boundaries between reality and imagination. Thus, when pressure is placed on people to remember suggested information or events, people tend to ease their criteria for attributing events to memory. The social pressure leads to loose criteria for memory source monitoring. Therefore, when receiving suggestive information and under social

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of Reality, ed. Joseph de Rivera & Theodore R. Sarbin, (Washington: American Psychological Association, 1998), 132.

<sup>415</sup>Elizabeth Loftus, "Creating False Memories," *Scientific American*, vol 277, 3 (1997): 70-75; Elizabeth Loftus, "The Reality of Repressed Memories," *American Psychologist*, 48, (1993), 518-537.

<sup>416</sup> See for example, Elizabeth Loftus' *Lost in the Mall*. It will be discussed shortly.

<sup>417</sup> An extreme example of a cue that can confabulate ones memories is hypnosis. See Schacter, *Searching for Memory*, 107-108.



pressure, one is more likely to experience false memories and the absence of refuting evidence facilitates the integration of false information.<sup>418</sup>

### **Imagination inflation**

Another reason for memory distortion stems from interaction between remembering and imagining. Imagination and visualization can create vivid details or memories of events that never happened. The ability to look back, reconsider, or reflect on the past exceeds beyond the real event toward the possibility, counterfactual thoughts, the as if, the might have been and toward the might will be. We use imagination to cope with our memories, to imagine how we should have done differently in order to plan how we should react in the future. However, the extent to which imagination is involved in remembering exceeds our awareness; counterfactual thoughts are integrated in memories themselves that we are sure correspond accurately to the past. The involvement of imagination in examining and thinking about the past guides the way people make sense of it (through counter-factual thinking, what-if scenarios, etc), but it also changes memories.<sup>419</sup>

Imagination also comes to memory's aid and fills in gaps when forgetting and lack of information occur. Every time we are confronted with inconsistent information, external counter-evidence, and a reality that is incompatible to other memories, we add information to complement the event, reconciling the gaps and providing a coherent story. In their book, *The Development of Autobiographical Memory*, Markowitsch and Welzer describe an experiment which shows that when subjects are missing information, they tend to fill the gaps without being

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<sup>418</sup> Kimberley A. Wade and Maryanne Garry, "Strategies for Verifying False Autobiographical Memories," *The American Journal of Psychology*, Vol. 118, 4, (2005): 588-590.

<sup>419</sup> Roese, N. J., & Hur, T., "Affective Determinants of Counterfactual Thinking," *Social Cognition*, 15, (1997), 274-290. Garry Maryanne and Polaschek L. L. Devon, "Imagination and Memory," *Current Directions in Psychological Science*, (2000): 6-10.

aware that they added information. They describe an experiment in which they showed subjects a film in which some short sequences were excluded. In one of the scenes, a person gets up from bed and, in the next scene, is fully dressed. The other sequence jumps from a scene in which a woman picks up a perfume in a store to a shot where she wipes it off her wrist. Although the shot of the woman spraying the perfume is missing, when showed the missing scene, the subjects falsely identified having seen it, as did the other set of subjects misremember seeing the man get dressed.<sup>420</sup> Such absence forms gaps that are filled automatically and without our awareness to make our conscious experiences comprehensible and palatable. We are sure that we saw or experienced the additional details rather than imagined them. We create an outline of proceedings and then fit in false events and descriptions that corroborate with the general outline. Memory cannot provide us with all necessary details and, in many cases, we have only a fragmented picture of complex events. To provide coherent story, we then add details to complement the event. These details can be taken from external sources or from our own imagination,<sup>421</sup> and can lead to a new interpretation of the remembered experience. However, imagination does not only involve supplementing missing information, but also can produce entirely false autobiographical memories. Indeed, studies show that people can develop both a belief in and memory of an event that definitely did not happen simply by imagining its occurrence.<sup>422</sup> By and large, imagination inflation refers to situations in which imagining an event leads to a belief that the event actually took place, inducing a false autobiographical

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<sup>420</sup> Markowitsch and Welzer, *The Development of Autobiographical Memory*, 17.

<sup>421</sup> C. J., Brainerd, V. F. Reyna, *The Science of False Memory*, (Oxford: Oxford University press, 2005), 33-34.

<sup>422</sup> Giuliana Mazzoni and Amina Memon, "Imagination Can Create False Autobiographical Memories," *Psychological Science*, Vol. 14, 2 (2003): 186-188.

memory.<sup>423</sup> False memories are created when events that were originally imagined or intensely thought about are experienced as real in memory. Illustration of imagination inflation can be drawn from Hume who describes the habitual liar that starts to believe to his lies. Hume indeed refers to a deliberate act of lying which transforms lies into memories that are accompanied with belief in their veridicality:

“As liars, by the frequent repetition of their lies, come at last to remember them; so the judgment, or rather the imagination, by the like means, may have ideas so strongly imprinted on it, and conceive them in so full a light, that they may operate upon the mind in the same manner with those, which the senses, memory or reason present to us.”<sup>424</sup>

Contemporary neuroscientists do not attribute imagination inflation to liars, but to an unconscious state in which intensive imagination leads to the belief that the imagined event did occur. Imagination inflation can occur even when there is no overt social pressure, and when hypothetical events are imagined only briefly.

One particularly famous study of imagination inflation, Loftus’s “lost in the mall” study, examined whether it is possible to “implant” entire false memory for an event that has never happened. In her experiment, Loftus induced people to believe that they had been lost in a shopping mall when they were young children, even while this did not occur to them. The participants were provided with descriptions for four memories, three of them were true while

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<sup>423</sup> Maryanne Garry, Charles G. Manning, Elizabeth F. Loftus, “Imagination Inflation: Imagining a Childhood Event Inflates Confidence that it Occurred,” *Psychonomic Bulletin & Review*, 3 (2), (1996), 208-214. Goff, L. M., & Roediger, H. L., “Imagination Inflation for Action Events: Repeated Imaginings Lead to Illusory Recollections,” *Memory & Cognition*, 26, (1998): 20-33. Ira E. Hyman, Jr., and Joel Pentland, “The Role of Mental Imagery in the Creation of False Childhood Memories,” *Journal of Memory and Language*, 35, (1996): 101-117.

<sup>424</sup> David Hume, *A Treatise of Human Nature* I. iii. ix.

the forth (of being lost in a shopping mall) was false. They were asked to write about the events. After a while some of the participants started to develop a memory about being lost in a shopping mall. They were very confident about the memory and could provide additional details and emotions for the experience.<sup>425</sup> Thus, people can develop both a belief in and a memory of an event that definitely did not happen simply by imagining its occurrence.<sup>426</sup>

What is it about imagining an event that causes people to believe that it really happened? There are two main explanations for imagination inflation. The first is source confusion, a process in which content and source (the circumstances in which information was learned) diverge. In source confusion, details are falsely attributed to actual experience rather than imagination<sup>427</sup> as this creates a false memory. The second explanation for imagination inflation is familiarity. If we imagined an event, and this fantasy contains plausible details about the context and setting of the event, we will be prone to believe that the imagined scenario is a memory of an actual event. Fictitious experiences, when they are imagined intensely and repeatedly, become more familiar. Through repetitive imagining of the occurrences, people may begin to see vividness and validity in the stories. In turn, this familiarity misleads us to see them as memories of actual external event. Thus, people can incorrectly attribute the increased familiarity of imagined events to actual external events, incorporating it into autobiographical memories. Imagination inflation is the product of overlapping source confusion and familiarity mechanisms. It seems that some people are more likely to inflate than others; tendency toward imagination inflation has to do

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<sup>425</sup> Loftus, and Pickrell, "The Formation of False Memories," 720-725.

<sup>426</sup> Mazzoni and Memon, "Imagination Can Create False Autobiographical Memories," 186-188.

<sup>427</sup> Henkel, L.A., Franklin N., & Johnson, M.K., "Cross-Modal Source Monitoring Confusions Between Perceived and Imagined Events," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26, (200): 321-335.

with a predisposition to both hypnotic suggestion and dissociation (i.e., tendency to lose awareness and confuse fact with fantasy).<sup>428</sup>

While source confusion and familiarity are attributed as causes for imagination inflation, it is not clear, however, what underlying mechanism drives imagination inflation, nor is it known under which circumstances imagining recent autobiographical events might boost confidence that they occurred.<sup>429</sup> However, it is assumed that many of the same neural networks must be active in both the construction and retrieval phase for imagined and experienced events (a point will be discussed later). Visual imagery and visual perception activate some of the same brain region, explaining why visual imagery can be confused as remembered visual perception. Some of studies show that true memories contain more sensory and perceptual details than do related false memories.<sup>430</sup> However, experiments and neuroimaging studies have shown that there is an extensive overlap in the brain regions that support true and false memories<sup>431</sup> as, for example, in false memories that derived from a general similarity and in gist-based false recognition.

### **Confabulation**

Confabulation occurs when people produce completely false memories and narratives of events that never occurred. It is often used to refer to people with neurological or psychiatric disorders such as schizophrenia and is associated with damage to the prefrontal cortex and related regions.

Due to neurological damage, the self constructs confabulated and erroneous stories that can

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<sup>428</sup> John R. Paddock, et al., “When Guided Visualization Procedures May Backfire: Imagination Inflation and Predicting Individual Differences in Suggestibility,” *Applied Cognitive Psychology*, vol. 12,9 (1998): 63-75. Loftus and Pickrell, “The Formation Of False Memories,” 720 – 725.

<sup>429</sup> Maryanne Garry and Devon L. L. Polaschek, “Imagination and Memory,” *Current Directions in Psychological Science*, Vol. 9, 1 (2000): 6-10.

<sup>430</sup> Marcie K. Johnson, Shahin Hashtroudi, and D. Stephen Lindsay, “Source Monitoring,” *Psychological Bulletin*, vol 114, 1 (1993): 4. Schacter and Slotnick, “The Cognitive Neuroscience of Memory Distortion,” 149–160. Norman KA, Schacter D. L., “False Recognition in Young and Older Adults: Exploring the Characteristics of Illusory Memories. *Memory & Cognitive*, 25, (1997):838–48.

<sup>431</sup> Schacter, *The Seven Sins of Memory*, 99.

range from mundane to fantastic narratives. Studying patients with split brain shows that the left and right cerebral hemispheres are responsible for different actions, and also behave and react to information differently and independently of how the other hemisphere experiences it. The right hemisphere, for example, handles nonverbal information such as images and spatial locations and the left hemisphere handles language and symbols. While the right hemisphere remembers and represents objects or experienced events, it represents reality literally. In contrast, the left hemisphere provides interpretations, explanations, and rationalization to make sense of actions organized by the right hemispheres.<sup>432</sup> The left hemisphere fills and compensates gaps. It tries to form coherency and to put things in context, being responsible for incorporated information that fits the gist and forms a coherent picture.<sup>433</sup> Thus, it is the left hemisphere which confabulates by recognizing imagined scenarios as memories. Confabulation is accompanied by strong feeling of remembering even when the “remembered” event does not correspond to any experience in reality. People with neuropsychological disorders can confabulate stories so consistent and coherent (usually subordinated to a specific theme) that they can sometimes only be refuted by relatives. In this sense, the confabulating person is characterized with deficit of self- awareness. When patients are confronted with the implausibility of their stories, they usually follow with another confabulated explanation. Confabulation is believed to be derived from deficits in information retrieval and is generated by a deficit in linking time and place of actually experienced events. However, confabulation does not only occur to people with brain injuries, as researchers have extended the phenomenon to refer to memory distortion in healthy people as well. Healthy people confabulate all the time; most of the time these confabulations are minor

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<sup>432</sup> Schacter, *The Seven Sins of Memory*, 157 -158.

<sup>433</sup> Gazzaniga, *Who’s In Charge? Free Will and the Science of the Brain*, 81 -87.

and indiscernible. Yet there are cases when confabulation features whole false narratives (like in imagination inflation).

Confabulation shares many characteristics with all other memory distortions produced by healthy people and, as a result, can be seen as an exaggeration of the constructive process of normal remembering.<sup>434</sup> This phenomenon is also called False Memory Syndrome (FMS). A good example of confabulation in people without brain injuries is the psychotherapy example outlined above, where subjects recovered of repressed memories of sexual abuse that apparently never happened. Therapists implanted these confabulated memories in vulnerable people by providing a narrative of events that never happened. *Déjà vu* is another example of memory confabulation.<sup>435</sup> Indeed, the distinction between confabulation and construction is ultimately not clear. Both normal remembering and confabulation involve reconstruction in order to form a plausible and coherent story. It is not always possible to identify in healthy people when confabulation takes place, since the confabulated narratives are coherent and commonsense. In healthy people, the left hemisphere is likely responsible for interpreting events and for changing representations in order to provide a coherent context, but we are not aware to this kind of daily confabulation.

### **Memory formation**

Memory errors, distortions, and modifications offer researchers an open a window into the nature of the human memory process and suggest that memory is a reconstructive process. The constructive memory framework (CMF) tries to specify the psychological processes that encode,

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<sup>434</sup> Morris Moscovitch, "Confabulation," in *Memory Distortion*, ed. Daniel L. Schacter (Cambridge: Harvard University Press, 1995), 226 - 232. See also Elizabeth Loftus' experiments

<sup>435</sup> Moulin C.J.A, et al., "Disordered Memory Awareness: Recollective Confabulation in Two Cases of Persistent *Déjà Vu*," *Neuropsychologia*, 43, (2005):1362–1378.

store and retrieve memories, showing how errors in memory, which are a natural part of its operation, can come about. There are many factors that can distort memory, and several types of distortions often occur concurrently. However, this range of memory distortions does not exhaust the full spectrum of modifications that effect memory. In the last section, I did not deal with all possible memory distortions because I intended to provide an overview of the research on the functional basis for memory construction. The research on the nature of constructive memory extended from functional studies to the identification of the underlying neural mechanisms of memory. Neuroscientists who focus on brain substrate of remembering and learning have begun to examine the process of memory formation and the patterns of persistent changes that are induced by neuronal and synaptic plasticity. These neuroscientists explain the mechanism of neural substrate that underlie and correlates with memory's behavioral and cognitive manifestations.

Memory is not only divided to different types, but also is distinguished by different phases; the phases are divided from its first constitution to its later actualization: encoding, retaining, and retrieval. These stages interact with each other as, for instance, encoding influences storage that, in turn, impacts retrieval that affect new encoding. In the following, after I discuss these phases, I will focus on two theories most relevant to constructive aspects of memory: the multiple trace theory and reconsolidation theory. These prominent and closely linked theories shed light on memory formation and constitution as it underlies the cognitive psychologists' conceptualization of constructive memory.



## **Encoding –persistence – retrieval**

Encoding refers to the initial acquisition of information, the process of transforming experiences to neural representation.<sup>436</sup> Michael H. Hasselmo defines “encoding as the neural mechanisms which form persistent representations of events for later retrieval.”<sup>437</sup> Memory depends on the way we encode information, which, in turn, depends on perception and on the interaction between new and previously encoded representations. The neural activity associated with perception, comprehension, and attention serves and enables memory encoding. Some neuroscientists claim that encoding is not distinguished from perceptual process. It is also not clear when encoding ends and stabilization or storing begin (I will come back to this question later).

What is clearer is that encoding converts an experience into an “engram.” Engram refers to an internal representation of an encoded experience that emerges from learning and is the physical manifestation of the memory trace<sup>438</sup> in the brain.<sup>439</sup> Engrams may also have a core which is responsible for the persistence of essential memory features over time.<sup>440</sup>

Remembering depends on persistence of these traces, on lasting modifications in neural representation or behavioral expressions as a result of experiences. However, memory traces can be persistent even if they are not revealed in behavior and are hardly conscious. Scientists have not yet identified the mechanisms of persistence for each specific type of memory, nor is it now

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<sup>436</sup> Fergus I. M. Craik, Encoding: a Cognitive Perspective, in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007),132.

<sup>437</sup> Michael, E., Hasselmo, “Encoding: Models Linking Neural Mechanism to Behavior,” in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 123.

<sup>438</sup> Engram and trace are used interchangeably. However, some distinguish between these two concepts and define engram as the physical manifestation of a memory in the brain and trace as the representation past event.

<sup>439</sup> Schacter, “Memory Distortion: History and Current Status,” 6.

<sup>440</sup> Yadin Dudai, *Memory From A to Z. Keywords, Concepts and Beyond*, (Oxford: Oxford University Press, 2002), 88.

possible to differentiate persistence from retrieval. The engram, the stored fragmentary remains of an experience, is not yet memory; the existence of an engram does not necessarily result in the manifestation of a memory but provides necessary (physical) condition for memories to emerge.<sup>441</sup> That is, persistence of an engram is itself not sufficient to be defined as a memory; memory also depends on an access to the engram and for this, retrieval is required.<sup>442</sup> Retrieval refers to a process that actualizes and reactivates stored information. Thus, we can see the distinction between persistence and retrieval by referring to the availability and accessibility of information.<sup>443</sup> Accessibility depends on the retrieval conditions, on availability of appropriate retrieval cue that interact with encoded information (engram).<sup>444</sup> Retrieval cue refers to particular information in the current, external or internal environment that invokes stored information. The cue prompts and activates a memory trace when it matches the encoded memory.<sup>445</sup> Successful retrieval depends on the similarity or the degree of overlap between encoding and retrieval.<sup>446</sup> When the trace is combined with appropriate cue, retrieval occurs and is expressed in conscious remembering. The specific way in which we encode an event determines which retrieval cues can induce restored memories. Neuroscientists term this encoding specificity principle. Elaborative encoding, for example, is likely to yield a higher probability of recall than non-elaborative encoding since elaborative encoding responds and enables access to a wider variety

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<sup>441</sup> Morris, Moscovitch, "Memory: Why the Engram is Elusive," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007),18.

<sup>442</sup> Howard Eichenbaum, "Persistence : Necessary, But Not Sufficient," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007),193.

<sup>443</sup> Yadin Dudai, *Memory From A to Z. Keywords, Concepts and Beyond*, 222.

<sup>444</sup> Schacter, *Searching for Memory: The Brain, the Mind, and the Past*, 63. Tulving, *Elements of Episodic Memory*, 1983, 169.

<sup>445</sup> Moscovitch, "Memory: Why the Engram Is Elusive," 18.

<sup>446</sup> Scott C. Brown and Fergus I.M. Craik, "Encoding and Retrieval of Information," in *The Oxford Handbook of Memory*, ed. Endel Tulving & Fergus I.M. Craik, (Oxford: Oxford University Press, 2000), 99.

of retrieval cues.<sup>447</sup> However, if we encounter the right cue, non-elaborative encoding can be invoked as well. Adding to this general feature of retrieval, there are two types of retrieval cues: feature cues and context cues. First, feature cues are content of the original memory or related content that trigger recall. Second, context cues involve information that derives from the setting or environment in which a memory or learning occurred which can trigger the recollection of a memory. In this second type, the context cues can be external or internal. External context includes details such as the surrounding and place a memory was encoded. In contrast, internal context cues include one's physiological and psychological state upon encoding (such as being drunk, excited, scared, or depressed).<sup>448</sup> Neuroscientists maintain that remembering is easier when the new context matches the internal or external context of the initial experience. Thus, our own state of mind can serve as a cue for remembering. It is, for example, useful to return to the same setting where an experience first happened to facilitate remembering, or to be in the same physical or mental state as when the event originally took place. For example, when people drink alcohol at the time of initial encoding, it is likely they will better remember their experiences when they are again in the same intoxicated state.

The state of an engram determines extent to which a cue must be involved at the time of retrieval. When the engram is fresh and rich, this engram itself might be the dominant component for recollection. In this case, relatively little retrieval information is needed to elicit the engram and retrieval cues will play a minor role in triggering and shaping the experience of remembering.

However, if an engram stems from our remote past, then the role of the retrieval cue will be more prominent and this cue and its properties will more greatly determine the recollective experience.

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<sup>447</sup>Schacter, *Searching for Memory: The Brain, The Mind, and the Past*, 63.

<sup>448</sup> A retrieval cue that induces the same state of mind that prevailed at the time of encoding is known as state-dependent retrieval. Schacter, *Searching for Memory: The Brain, The Mind, and the Past*, 62.

Thus, the role of the retrieval cue will depend on the temporal distance of the stored engram from the present.<sup>449</sup> While researchers traditionally held that retrieval cue functions as a stimulus that awakens and arouses a memory, they currently maintain that the role of a cue is not only to activate or arouse a memory, but also “to yield a new entity, a new recollective experience that differs from either of its constituent.”<sup>450</sup> Thus, retrieval cues, as much as past representations, determine the subjective experience of remembering. This new interpretation attributes the retrieval process a more dynamic function in the formation of a memory since such processes actualize information, rather than repeating or reiterating past experience. Schacter compares this dynamic function to the work of paleontologists, who reconstruct the bones chips of a dinosaur. The dinosaurs’ bones are combined in accordance to a general knowledge of how dinosaur should be reconstructed, just as our memories are constructed and reconstructed as the engram and cue combine to yield a new recollective experience. Retrieval occurs when relevant intrinsic networks become activated by relevant extrinsic stimuli, and when these different information sources integrate to form a meaningful memory. Because every retrieval integrates intrinsic and extrinsic information, the retrieval process is ongoing as the memory information is encoded once again at retrieval.

Thus, retrieving a memory trace is followed by a re-encoding event that involves a new process of consolidation-reconsolidation. As Susan Sara writes, “Remembering is an activity similar to perceiving, in the sense that it involves the apprehension and comprehension of contemporary stimuli in the light of past experience.”<sup>451</sup> In this way, re-encoding and retrieval are not separate processes, but instead are deeply interconnected and involve the same neural substrates because

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<sup>449</sup> Schacter, *Searching for Memory*, 79-80.

<sup>450</sup> Schacter, *Searching for Memory*, 70.

<sup>451</sup> Susan J. Sara, “Retrieval and Reconsolidation: Toward a Neurobiology of Remembering. *Learn. Mem.*, 7: (2000): 73–84.

the location of the neuronal change induced in the initial encoding also has to be activated during retrieval.<sup>452</sup> That is, retrieval itself is a new encoding, a new mental event that differs from the initial encoding. The interaction between re-encoding and retrieval involves constructive and reconstructive processes, again highlighting the dynamic and reconstructive character of memory as a whole.<sup>453</sup>

Retrieval is influenced by multiple mechanisms and factors like, for example, the initial state of the engram, depth of encoding, retrieval context, interaction between engram and cue, etc.

Failure of retrieval can originate from many factors such as the absence of retrieval cue, which itself can be derived by variety of factors such as interference, memory repression, competition between information, etc. Lacking an appropriate cue can hinder accessibility to memory and to a failure of retrieval. Failure of retrieval does not mean that the memory is forgotten, but that the specific cue that was present during encoding is not available and, therefore, that the information is not accessible. Failure of retrieval does not only lead to the absence of memory but can also lead to partial or entirely false memories.<sup>454</sup> In these cases, failure of retrieval is generated by the way engram and cues interact. For example, retrieval cues can potentially match different but similar memories, thus evoking memories other than the memory meant or information that does not pertain the original experiences and resulting in inaccurate memories that blend elements of different experiences.<sup>455</sup>

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<sup>452</sup> Michael E. Hasselmo, "Encoding : Models Linking Neural Mechanisms to Behavior," in *Science of Memory: Concepts*, 125.

<sup>453</sup> John M. Gardiner, "Retrieval: On Its Essence and Related Concepts," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007),221.

<sup>454</sup> Michael, Davis, "Forgetting: Once Again, It's All About Representations," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 318.

<sup>455</sup>Schacter, "The Cognitive Neuroscience of Constructive Memory," 131.

Memory is believed to be organized as a web in which features from different memories are associated. This “spreading activation” theory in fact explains how memory errors may occur. Representations of learning and memory are embedded in the brain by the strength and width of the neuronal connections.<sup>456</sup> When a cue activates a memory, it is likely that it also activates related features and ideas strongly associated with the memory. These connections and associations can result in importing and binding adjacent features that belong to other memories. Through these dense connections, different memories can become associated at the time of retrieval. However, these connections can also have the opposite effect, suppressing and inhibiting activation of weak associations and preventing them from being brought to awareness.

### **The multiple-trace theory (MTT)**

Current models assume that an initial encoded experience is generated by separate processes, and that no single anatomical location contains a complete record of a specific memory. In this view, memory representation components are distributed widely across different parts of the brain as mediated by multiple neocortical circuits.<sup>457</sup> Each circuit handles a distinct component of the original experience such as the visual, auditory, taste, tactual, and motor sensations. Researchers assume that the integration of these components takes place within the medial temporal regions. For instance, Schacter writes, “the medial temporal region contains instructions that specify how to assemble the puzzle; eventually, the instructions are shifted over to cortical regions that contain all the component pieces of the puzzle.”<sup>458</sup> These researchers also conjecture that the hippocampus instructs the neocortex how to bring together the components that make up a

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<sup>456</sup> Polster, Michael R., Lynn Nadel, and Daniel L. Schacter, “Cognitive Neuroscience Analyses of Memory: A Historical Perspective,” *Journal Of Cognitive Neuroscience*, 3(2), (1991): 105.

<sup>457</sup> Schacter, *Searching for Memory*, 91.

<sup>458</sup> Schacter, *Searching for Memory*, 87.

specific memory.<sup>459</sup> This means that the hippocampus does not contain the content of episodic memories itself, but that it continues to maintain information on how to activate and unify disparate episodic memory features from different cortical regions. The hippocampus functions as an index that activates and connects different features, acting as a ‘convergence zone’<sup>460</sup> that guides, directs, handles and integrates different kinds of informational components in separate cortical regions. Each encoded experience has an index that binds its different components that are kept separately. The index accomplishes this work through pattern completion processes that activate and bring together a memory trace. But this index process also entails that the hippocampus supports pattern separation. As the hippocampus binds the different part of a memory trace it also separates between similar but different experiences.

Thus, retrieval of a past experience involves a process of pattern completion in which the rememberer, when presented with a cue, pieces together the distributed information from different locations.<sup>461</sup> Phenomenally, remembering appears to the observer as a unified experience, just like perception itself appears unitary, but in fact each experience is sustained by multiple neural cognitive systems.<sup>462</sup> Morris Moscovitch, who maintains that the retrieval process is much more crucial than the other phases, clarifies the process of memory recovery with reference to finding a book in the library. He writes, “While the whole book is located in a specific place and picking the book is picking all that is included in it, retrieval process is more like assembling the pages of a book which may be scattered in different locations in the library.

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<sup>459</sup> Lynn Nadel, “Consolidation: The Demise of the Fixed Trace,” in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 178 -179.

<sup>460</sup> Schacter, *Searching for Memory*, 86. Nadel Lynn, Moscovitch Morris, “Memory Consolidation, Retrograde Amnesia and the Hippocampal Complex,” *Curr Opin Neurobiol* 7, (1997): 217–227.

<sup>461</sup> Schacter, “The Cognitive Neuroscience of Constructive Memory,” 131. Morris, Moscovitch, “Memory: Why the Engram is Elusive,” in *Science Of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 19.

<sup>462</sup> Schacter, *Searching for Memory*, 87.

Finally, unlike a call number which is distinct from the book itself, retrieval cues and processes interact with the engram and influence the memory which is recovered. Depending on the interaction, some ‘pages’ of the memory may be missing, others may be placed in the wrong sequence, still others may be imported from other books which are related in some way to the cues and the engrams, and some of the cues themselves may be incorporated into the memory that is recovered and change the engram on which it was based.”<sup>463</sup> Recovering a memory occurs when the hippocampus brings together scattered information from different brain locations. The reactivation of features spread over different location involves the complex process of collecting all parts of a stored experience. The interaction between a cue and a memory representation can add/eliminate information from the encoded engram, import related information from other engrams, change the order of encoded the information, and so on. Binding a faulty feature to the original engram may results in various memory distortion such as source failure—the failure to remember the how and when the episode took place.<sup>464</sup> In short, according to the MTT, remembering something is not like storing a file on the computer, which remains the same from the moment we closed the computer at night to the next morning when we open it again. Rather, every time we access a memory, we come up with different results.

### **Reconsolidation Theory**

Memory recovery is not only integration of a retrieval cue with the dissipated components of a memory trace but there are additional aspects that determine the subjective recollective experience. Current neuroscientists claim that, at the time of retrieval, a memory again enters an unstable state, after which it goes through another process of stabilization and reconsolidation.

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<sup>463</sup> Moscovitch, *Memory: Why the Engram is Elusive*, 19.

<sup>464</sup> Schacter, et al., *The cognitive Neuroscience of Constructive Memory*, 130- 131. Schacter and Addis, *The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future*,” 773.



Memory consolidation refers to the process that stabilizes a memory trace after the initial acquisition (encoding). This consolidation process converts an unstable short term memory (STM) trace into a more stable long term memory (LTM) trace,<sup>465</sup> rendering temporary traces into persistent memories.<sup>466</sup> Thus, a memory becomes gradually resistant as time passes and is less susceptible to disruptions through the consolidation process.<sup>467</sup> Although their functions are unambiguous, it is not clear when encoding ends and consolidation begins, or even whether consolidation is part of encoding or whether consolidation and encoding are separated processes.<sup>468</sup> Lila Davachi distinguishes between encoding and consolidation, claiming that encoding occurs when one consciously attends to an event, while consolidation occurs when one's attention is turned away from it.<sup>469</sup>

During consolidation, a memory is susceptible to change or disruption, but when a memory becomes long-term, it also becomes more stable. At the anatomical level, memory consolidation is the process by which memory becomes independent of the hippocampal region and spreads to other regions in the neocortex (cf. multiple trace theory). Indeed, the hippocampus does not store information for extended time but is involved in the process of stabilizing memories until they are transferred for more permanent storage in various locations in the cerebral cortex. While the hippocampal system serves as temporary memory storage because hippocampal synapses can change quickly, the neocortex serves as permanent memory store since neocortical synapses

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<sup>465</sup> Nader Karim, et al., "The Labile Nature of Consolidation Theory," *Nature*, 1 (2000), 216 -219. See also, Yadin Dudai, "The Neurobiology of Consolidations, Or, How stable is the Engram?" *Ann, Rev, Psychol.*, 55, (2004), 51-86.

<sup>466</sup> Joseph E. Ledoux, "Consolidation: Challenging the Traditional View," in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 172.

<sup>467</sup> Squire LR, Alvarez P., "Retrograde Amnesia and Memory Consolidation: a Neurobiological Perspective," *Curr, Opin, Neurobiol*, 5, (1995): 169– 77.

<sup>468</sup> Lila, Davachi, Integrative Comments, Encoding: the Proof is Still Required, in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 138.

<sup>469</sup> Lila Davachi, Integrative Comments, Encoding: the proof is still required, in *Science of Memory: Concepts*, 139.

change slowly.<sup>470</sup> As Squire and Alvarez have noted, “Apparently, as time passes after learning, there is gradual reorganization within long-term memory storage whereby the importance of the hippocampal formation gradually diminishes and a more permanent memory system develops independently of this region.”<sup>471</sup>

The emergence of these long-term storage systems manifests itself at two different levels of memory consolidation and organization:<sup>472</sup> cellular or synaptic consolidation and the systems consolidation.<sup>473</sup> Cellular or synaptic consolidation refers to the stabilization that occurs in the nodes of neural circuits, synapses, or neurons. New memories undergo stabilization through the formation of new synaptic circuits. This stabilization process is completed within minutes, hours, or days after learning and the time window of circuit susceptibility may range from seconds to hours. In this susceptible phase, engrams are more sensitive to forgetting and changes.<sup>474</sup> The system consolidation refers to the circuit level that involves the reorganization of the memory trace<sup>475</sup> in which memories gradually change the anatomical localization of the trace.<sup>476</sup> System

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<sup>470</sup> Cristina M. Alberini, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” *Trends Neurosci* 28, (2005):

<sup>471</sup> Squire LR, Alvarez P., “Retrograde Amnesia and Memory Consolidation: a Neurobiological Perspective,” *Curr Opin, Neurobiol*, 5, (1995): 171.

<sup>472</sup> Yadin Dudai and Richard G.M. Morris, “To consolidate or Not Consolidate: What are the Questions,” in *Brain, Perception, Memory: Advances in Cognitive Neuroscience*, ed. Johan J, Bolhuis (Oxford: Oxford University press, 2000), 149. Yadin Dudai, “Predicting Not to Predict too Much: How the Cellular Machinery Of Memory Anticipates the Uncertain Future,” *Philosophical Transactions of the Royal Society B*, 364, (2009):1256.

<sup>473</sup> Yadin Dudai, “The Restless Engram: Consolidations Never End,” *Annu. Rev. Neurosci.*, 35 (2012): 227-247. Yadin Dudai, “Consolidation: Fragility on the Road to the Engram,” *neuron*, 17, (1996): 367-370.

<sup>474</sup> Schacter, *Searching for Memory*, 82.

<sup>475</sup> Dudai and Morris, “To Consolidate or not Consolidate: What are the Questions,” 149.

<sup>476</sup> The reason that people with brain damage or amnesia remember events that took place in their childhood or in years preceding the brain damage is probably due to consolidation. The engrams of earlier experiences had become fixed or consolidated in the extensive cortical network outside the medial temporal regions that coordinates long term storage. Ambrogio Lorenzini et al., “Neural Topography and Chronology of Memory Consolidation: A Review of Functional Inactivation Findings,” *Neurobiol Learn. Mem.* 71,(1999): 1–18. Frankland, P.W. et al., “The Involvement of the Anterior Cingulate Cortex in Remote Contextual Fear Memory,” *Science* 304,(2004): 881–883. Maviel, T. et al., “Sites of Neocortical Reorganization Critical for Remote Spatial Memory,” *Science* 305, (2004): 96–99. Anagnostaras, S.G. et al., “Temporally Graded Retrograde Amnesia of Contextual Fear After Hippocampal Damage in Rats: Within-Subjects Examination,” *J. Neurosci.* 19, (1999):1106–1114. Gordon Winocur, and Morris

consolidation engages neural circuits different from those that were used for encoding memory traces at earlier stages of their existence.<sup>477</sup> In system consolidation, memory storage shifts from the hippocampus to the neocortex when fully consolidated. This process is called system consolidation as the memory moves from one neurological system to another.<sup>478</sup> This process is longer than synaptic consolidation and can endure weeks, months, years, and even decades.<sup>479</sup> Engrams that consolidate over long time periods become more resistant to certain kinds of interference such as environmental and behavioral distractions, and drugs and brain damage (including cerebral trauma, electroconvulsive shock, and protein synthesis inhibitors). System consolidation most commonly refers to declarative memory, but may exist in non-declarative memory as well.

In the past, researchers claimed that memory consolidation takes place only once. It was believed that after consolidation, memories are stable, resilient to disruption, and stabilized in final form.<sup>480</sup> According to these researchers, each time you recall a memory, you activate the same trace over and over again. In short, the initial idea among memory researchers was that consolidation stabilizes memories in a reliable way.

However, the theory of memory has been changed radically in the last two decades. Currently, neuroscientists, focusing on neural processes and mechanisms of memory persistence (such as

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Moscovitch, "Memory Transformation and Systems Consolidation," *Journal of the International Neuropsychological Society*, 17, (2011): 766–780.

<sup>477</sup> Dudai and Morris, "To Consolidate or Not Consolidate: What Are the Questions," 149.

<sup>478</sup> Joseph E. Ledoux, "Consolidation: Challenging the traditional view," in *Science of memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 173.

<sup>479</sup> Dudai and Morris, "To Consolidate Or Not Consolidate: What Are the Questions," 149.

<sup>480</sup> Alberini, "Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?" 51.

synaptic strength and plasticity),<sup>481</sup> emphasize the dynamic and complex nature of memory.

These neuroscientists claim that memories are always in a state of change and constant adjustment as memories are not permanently stored, but enter a transient and labile state during retrieval.<sup>482</sup> Thus, memory retrieval behaves like re-encoding; the instability of the encoding process exists again at the time of memory activation.<sup>483</sup> The engram returns to short-term active state when memories are vulnerable to distortions.<sup>484</sup> Some neuroscientists who deal with reconsolidation theory maintain that the act of retrieval can itself cause amnesia since the connections between the synapses underlying the trace become weakened. Thus, retrieval, by itself can disrupt an established memory trace.<sup>485</sup>

The susceptibility of memory to modification during reconsolidation depends on various factors such the age of the memory, task specificity, strength of initial learning, and strength and number of prior reactivations. For example, when the memory is weak, it is more susceptible to disruptions, and the stronger the reactivation of a memory, the more it becomes labile.<sup>486</sup> Due to these findings, neuroscientists have assumed that when a memory is reactivated, it must undergo

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<sup>481</sup> Plasticity became a central component in describing the way memory works. Plasticity refers to the fact that the nervous system has the ability to adapt or change as a result of experiences. The experiences modify the nervous system and as result it brings about different behavior. As for memory, the neural plasticity (the cellular properties of the cells and their connections) change as a result of experience.

<sup>482</sup> Yadin Dudai, "Molecular Bases of Long-Term Memories: a Question Of Persistence," *Current Opinions in Neurobiology*, 12,(2002): 211-216. Yadin Dudai, "Predicting Not to Predict too Much: How the Cellular Machinery Of Memory Anticipates the Uncertain Future". *Philosophical Transactions of the Royal Society B*, 364, (2009):1255-1262. See also Cristina M. Alberini, "The Role of Reconsolidation and the Dynamic process of Long-Term memory Formation and Storage," *Front Behav Neurosci*, 5: 12 (2011).

<sup>483</sup> Lynn Nadel, "Consolidation: The Demise of the Fixed Trace, in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 179.

<sup>484</sup> The state of the trace determines its vulnerability. The premise is that memories in an inactive state are less vulnerable to disruptions than memories in active state. However, this assumption generates controversy whether it is indeed true that inactive memories are less susceptible for intervention and only the active state of the trace is inductive to vulnerability.

<sup>485</sup> Nader K., "Memory Trace Unbound," *Trends in neuroscience*, 26, (2003): 65-72.

<sup>486</sup> Alberini, "Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?" 54.

additional phase of consolidation (known as “reconsolidation”) to persist.<sup>487</sup> Thus, consolidation takes place not only after new learning (encoding), but also after every recall (memory retrieval).<sup>488</sup> The molecular mechanism that stabilizes memory is required after every time we recall.<sup>489</sup>

The functional significance of the labile phase of reconsolidation is not fully known. Generally, researchers assume that the reconsolidation process reinforces and sustains the reactivated memories,<sup>490</sup> allowing new information and learning to become associated with already established and reactivated memories.<sup>491</sup> Indeed, during reconsolidation memories do not just remain as they were but change to allow the integration of new information.<sup>492</sup> Reconsolidation is thus a manifestation of a larger memory updating mechanism that adapts the reactivated memory to new circumstances.<sup>493</sup> From neurobiological point of view, this adaption mechanism permits new experiences and information to modify existing neuronal connections and networks. The adaptation mechanism of reactivated memory traces is possible because of enhanced plasticity state of neuronal circuits that encode the memory trace or parts of it.<sup>494</sup> In this way,

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<sup>487</sup> Yadin Dudai, “The Neurobiology of Consolidations, Or, How stable is the Engram?” *Ann. Rev. Psychol.*, 55, (2004): 51-86. Alberini, “Mechanisms of Memory stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” 51.

<sup>488</sup> Researchers examined the effects of protein synthesis inhibitors after memory reactivation. Cristina M. Alberini, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” *Trends Neurosci* 28, (2005). J. David, Sweatt, “Retrieval: Molecular Mechanisms,” in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 210.

<sup>489</sup> Alcino J. Silva, “Consolidation: Molecular Restlessness,” in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 169.

<sup>490</sup> Susan J. Sara, “Strengthening the Shaky Trace Through Retrieval,” *Nat. Rev. Neurosci.*, 1, (2000): 213.

<sup>491</sup> Cristina M. Alberini, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” *Trends Neurosci* 28, (2005). Tronel S, Milekic MH, Cristina M. Alberini, “Linking New Information to a Reactivated Memory Requires Consolidation but Not Reconsolidation Mechanisms,” *PLoS Biol.* 3: (2005): 1630 -31.

<sup>492</sup> Cristina M. Alberini, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” *Trends Neurosci* 28, (2005).

<sup>493</sup> Yadin Dudai, “Reconsolidation: the Advantage of Being Refocused,” *Curr Opin Neurobiol* 16(2), (2006): 175.

<sup>494</sup> Yadin Dudai, “Molecular Bases of Long-Term Memories: a Question of Persistence,” *Current Opinions in Neurobiology*, 12, (2002): 211.

plasticity refers to the fact that inherent in nervous system is the ability to adapt or change as a result of new experiences, learning, and remembering. Changes in synapses, (the fundamental storage element in the brain) enable reconsolidation and adaption. While synapses allow for change and modification as plastic and flexible, they also facilitate storing and stability since synapses convey and maintain memory information.<sup>495</sup> Thus, as John Sutton formulates it, the neuroscience of memory postulates two coexisting but contradictory features: “distinct transient patterns of activity, and composite, enduring, but modifiable dispositional states.”<sup>496</sup> On the one hand, synaptic flexibility allows for the persistence of lasting impressions on neural circuits, while, on the other hand, it also enables change and modification.<sup>497</sup>

Still, it is not clear whether reconsolidation recapitulates consolidation. Researchers investigating reconsolidation have come to no consensus about whether consolidation and reconsolidation are separate or corresponding processes. They have investigated whether their function and mechanism overlap,<sup>498</sup> whether the labile state of the trace is the same in both cases, and whether both phases engage the same brain areas, molecules, and pathways. The results of these studies appear to point to contrasting conclusions, with some memory systems seeming similar and other more distinct. From the findings that support the idea that reconsolidation is distinct from consolidation, researchers have concluded that reconsolidation and consolidation are

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<sup>495</sup> Jerry W. Rudy, *The Neurobiology of Learning and Memory*, (Massachusetts: Sinauer Associates, Inc Publishers, 2008), 118. See also Dudai, “Predicting Not to Predict too Much: How the Cellular Machinery Of Memory Anticipates the Uncertain Future,” 1256.

<sup>496</sup> John Sutton, “Memory, Philosophical Issues About,” *Philosophical Psychology*, 1111-1112. See also John Sutton, *Philosophy and Memory Traces: Descartes to Connectionism*, (Cambridge: Cambridge University Press, 1998).

<sup>497</sup> There are disagreements whether the original memory is lost or changed through reactivation, and whether reconsolidation brings about new memory, or only a modification of the original memory. Joseph E. Ledoux, Consolidation: Challenging the traditional view, in *Science of memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 175.

<sup>498</sup> The Role of Reconsolidation and the Dynamic Process of Long-Term Memory Formation and Storage, Cristina M. Alberini, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” *Trends Neurosci* 28, (2005).

characterized by different mechanism because the two processes require either different molecular mechanisms or involve different brain circuits.<sup>499</sup> Some of these studies found that consolidation and reconsolidation of episodic memory do appear to engage the same molecules and mechanisms, but that the brain areas involved in consolidation are not required for reconsolidation.<sup>500</sup> According to Tronel, for example, reconsolidation is distinct from the initial consolidation, since protein synthesis occurs in different brain areas for these two processes.<sup>501</sup> In addition, the formation of a memory and its maintenance following reactivation seems to have distinctive temporal molecular requirements.<sup>502</sup>

In contrast, other researchers suggest that these two processes are similar.<sup>503</sup> In this line, studies found that both processes require protein synthesis, involve the same brain area, and are impaired by the same inhibitors. The results of Nader et al. and Debiec et al. indicate that, although the consolidation and reconsolidation networks seem to be different, some brain regions could participate in both. They found evidence that the same molecular mechanisms and pathways mediate both consolidation and reconsolidation. Alberini recapitulates these contradicted findings, claiming that consolidation and reconsolidation share common molecular mechanisms, but “are distinct processes because they require, with some degree of overlap, the activation of

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<sup>499</sup> Taubenfeld, S.M. et al, “The Consolidation of New but Not Reactivated Memory Requires Hippocampal C/EBPb,” *Nat. Neurosci.*, 4,( 2001): 813–818. Cristina M. Alberini, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” *Trends Neurosci* 28, (2005).

<sup>500</sup> Alberini C. M., “Mechanisms of Memory Stabilization: Are Consolidation And Reconsolidation Similar or Distinct Processes?” *Trends Neurosci* 28, (2005): 53. Nyberg, L. et al., General and Specific Brain Regions Involved in Encoding and Retrieval of Events: What, Where, and When. *Proc. Natl. Acad. Sci. U. S. A.* 93, (1996): 11280–11285 .

<sup>501</sup> Dudai, “Molecular Bases of Long-Term Memories: a Question of Persistence,” 214. See also, Tronel S, Milekic MH, Alberini CM., “Linking New Information To A Reactivated Memory Requires Consolidation But Not Reconsolidation Mechanisms. *PLoS Biol.* 3, (2005):1630 -31.

<sup>502</sup> Alberini, “Mechanisms of Memory Stabilization: Are Consolidation And Reconsolidation Similar or Distinct Processes?” 51.

<sup>503</sup> Nader, K. et al., “Fear Memories Requires Protein Synthesis in the Amygdala for Reconsolidation After Retrieval,” *Nature* 406, (2000): 722–726.

different brain areas and circuits. In most cases, regions involved in consolidation are not required for reconsolidation.”<sup>504</sup> Although consolidation and reconsolidation might be separated processes, the encoding and retrieval correlate. Hasselmo maintains that the location of physical changes occurring during the encoding of episodic memory have to be reactivated at retrieval. In other words, retrieval activity is induced by the same synapses or neurons that were modified during encoding. However, retrieval can be also induced by different synapses and neurons in cases when “the locus of the memory has shifted due to reactivation processes during consolidation. Different supporting structures may separately supplement either encoding or retrieval, but the neural substrate for storage must be shared unless some consolidation process has shifted the substrate.”<sup>505</sup> Thus, reconsolidation is not a faithful replay of consolidation. It might share some mechanisms and even functions with consolidation, but the neural process of consolidation is different than memory retrieval.<sup>506</sup>

Thus, memory recovery is a complex process that is not only composed of collecting disparate memory traces, but involves integrating them with new incoming information and experiences. Memory traces are modified and reconstructed with use as memory retrieval involves a process of adjustment and revision, adjusting past memories with new perceptions and future anticipations.<sup>507</sup> Yadin Dudai writes, “Because reactivation of the trace commonly occurs in an altered context, it results in newly encoded hippocampal traces, which, in turn, bind new traces in the neocortex. This results in multiple traces that share some or all the information about the

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<sup>504</sup> Alberini, “Mechanisms of Memory Stabilization: Are Consolidation and Reconsolidation Similar or Distinct Processes?” 54.

<sup>505</sup> Hasselmo, “Encoding: Models Linking Neural Mechanisms to Behavior,” 125.

<sup>506</sup> Norman E. Spear, “Retrieval: Properties and Effects Science of Memory: Concepts, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 216.

<sup>507</sup> Dudai, “Predicting Not to Predict too Much: How the Cellular Machinery Of Memory Anticipates the Uncertain Future,” 1255-1262.



initial episode.”<sup>508</sup> Integrating new components into the activated engram thus forms a new version of the original episodic memory.<sup>509</sup> “A neural network combines information in the present environment with patterns that have been stored in the past, and the resulting mixture of the two is what the network remembers.”<sup>510</sup> The changes are part of a natural process where the memory trace undergoes various modifications that we cannot necessarily consider as errors or fabrication, but rather, stem from normal brain activity. Reconsolidation theory not only validates the constructive framework of memory, but it goes further, asserting that memory traces are modified and reconstructed repeatedly upon every retrieval. Every time that we activate a memory trace we change and update it.<sup>511</sup> Like during initial consolidation, interfering in the process of reconsolidation can strengthen, erase, weaken, and alter memory associations.<sup>512</sup> Reconsolidation theory provides a dynamic, constructive, and plastic view of the adaptive nature of the nervous system<sup>513</sup> and demonstrates that a memory is not a literal reproduction of the past, but instead an ongoing constructive process, an adaptive organism that conflates past and present. Thus, memory reactivations, whether implicit or explicit, have at least two functions: they are necessary for memory stabilization, but they also allow the integration of new and old information.

This view of memory retrieval undermines the epistemological status of memory, as it does the distinction between memory and imagination. If recovering a memory is a construction assembled from fragmentary past pieces, then our memories are far from being veridical

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<sup>508</sup> Dudai, “The Restless Engram: Consolidations never end,” 234-35.

<sup>509</sup> Schacter, *Searching for Memory*, 86.

<sup>510</sup> Schacter, *Searching for Memory*, 71.

<sup>511</sup> Susan J. Sara, “Integrative Comments, Consolidation: From Hypothesis to Paradigm to Concept,” in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press), 2007, 188.

<sup>512</sup> Alcino J. Silva, “Consolidation: Molecular restlessness, in *Science of Memory: Concepts*, ed. Henry L. Roediger III, Yadin Dudai and Susan M. Fitzpatrick, (Oxford: Oxford University Press, 2007), 168.

<sup>513</sup> Susan J. Sara, “Retrieval and reconsolidation: toward a neurobiology of remembering. *Learn. Mem.* 7 (2000):73.

representation of the past. Rather, they are generative presentations intimately connected to ourselves in our current conditions. This also raises the question about whether generative memory processes differ from imagination. Does the difference between these two cognitive capacities derive only from different levels of awareness? That is, while in imagination we are aware that we construct and modify reality, in memory we modify and construct without an awareness for this constructive process. In the next part I will deal with the epistemology of imagination and the distinction between these two cognitive concepts.

## **Imagination**

### **Introduction: Contemporary definition of the concept imagination**

Western philosophy exhibits an unresolved difficulty in defining the ontological and epistemological status of imagination. Imagination performs a wide range of different functions and activities while involving many diverse forms of thought. Going beyond perception, imagination enables us to visualize, think about, and represent what is absent. Imagination can represent a host of real or fictive objects in any time—past, present, and future. Intuitive conceptions of imagination imply that it is a mental process distinct from memory and knowing.<sup>514</sup> In these conceptions, the typical referent of imagination is fictional, not actual, and is considered to deviate from objective reality. Urmson writes, “Thus it seems to me in general right to say that what characterizes imagination is that it does not set out to resemble concrete events rather than that it has to avoid such resemblance.”<sup>515</sup> Therefore, it seems natural to define

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<sup>514</sup> Kendall L. Walton, *Mimesis as Make-Belief: On the Foundation of the Representational Arts*, (Cambridge: Harvard University Press, 1990), 13.

<sup>515</sup> J., O., Urmson, *Memory and Imagination*, *Mind* 76, (1967): 85.

imagination as a fictional representation, an alternative to factual reality. Indeed, imagination contains representations that cannot be real that are random, unfocused, and unplanned.

However, defining imagination as disconnected from the real world results in a narrow notion of imagination that does not encompass the variety of its features. Fantasies and imaginary are only one manifestation of imagination's general ability,<sup>516</sup> imagination is not strictly defined by fictiveness, having many other facets and forms that are compatible with reality and belief. For example, since the content of imagination derives from perception, an imaginary image may significantly resemble the content of a previous perception. In that sense, imagination can coincide with memory, even if this resemblance is not necessarily present in all situations.

Imagination then can be characterized by fictive attitude or intention, but, can also reflect really existing phenomena. Because imagination involves these diverse phenomena, it is a polysemous concept, entailing an array of meanings, manifestations, and experiences. The various uses of this concept are manifest in a range of derivative cognates such as image, imagine, mental imagery, imaginary, and imaginative, each of which imply differing cognitive processes and references.<sup>517</sup> Some cognates correspond only to an exercise of fictional representation, while

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<sup>516</sup> According to Casey, imagination and fantasy can converge, but they are nevertheless usually distinguished. There are five characteristics that distinguish fantasy from imagination. 1) Fantasy constructs a coherent narrative, in contrast to the fragmentary characteristics of hallucination and imagination, which are non-narrative in character and lack consistency and coherence. 2) The content of fantasy is either erotic or ambitious, and involves the ego of the fantasist in an active way, while in imagination and hallucination the subject is passive or a victim. One does not generally imagine one's self as participant in the ongoing action. 3) Imaginings are subject to more control than fantasies, which tend to take their own, counterintuitive course. 4) Fourth, "fantasies are experienced as wish fulfillment," and involve a self-indulgent pleasure, while imagination is characterized with absence of overt emotion. 5) Lastly, what we experience in fantasy is impossible. Fantasy does not represent what is empirically real or possible. Edward S. Casey, *Imagination, Fantasy, Hallucination and Memory*, in *Imagination and its Pathologies*, Ed. James Phillips & James Morley, (Cambridge: The MIT Press, 2003), 80 - 85.

<sup>517</sup> For a discussion see, P. F. Strawson, "Imagination and Perception," in *Experience and theory*, ed. L. Foster & J.W. Swanson (Amherst: University of Massachusetts Press, 1970). 32-54; McGinn C. *Mindsight: Image, Dream, Meaning*, (Cambridge, MA: Harvard University Press, 2004), 595; Kendall L. Walton, *Mimesis as Make Believe: On the foundation of the Representational Arts*, (Massachusetts: Harvard University Press, 1990); Leslie Stevenson, "Twelve Conceptions of Imagination," *British Journal of Aesthetics*, 43(3), (2003): 238–259.

others imply perceptual and memory images. For example, the words “imagery” and “imagining,” although sometimes used interchangeably, refer to different things, both of which are involved in the notion of imagination. Mental imagery involves sensory imagining of the kind involved in perceiving. It refers to a “quasi-perceptual experience: experience that significantly resembles perceptual experience (in any sense mode), but which occurs in the absence of appropriate external stimuli for the relevant perception.”<sup>518</sup> Thus, imagery is a sensory image that can involve forms of thought—perception-image, dream-image, memory-image, expectation–image, wishing-image—that vary in their proximity to standard imagination.<sup>519</sup> Imagery, then, is defined as production of mental images associated with perceptions, and it can be also related to other cognitive process such as memory, expectations, and dreams. For these reasons, imagery is an instance of imagination but is not strictly identified with imagination. In contrast, imagining can be imagery and visual but it need not involve imagery; to the contrary, it can comprise propositional attitude and narrative, aspects not found in imagery.<sup>520</sup> This example shows how imagination has several functions and is manifest in various ways. As a result, it may be difficult to identify the full scope of imagination, for it is hard find an experience in which imagination is not somehow involved. As Berys Gaut puts it “The notion of imagination is slippery to handle than that of creativity. Part of the problem is that it has a variety of uses, not always closely related to its core sense.”<sup>521</sup> Whereas cognitive psychologists divide memory into different systems and mechanisms, it is not clear whether the

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<sup>518</sup> Thomas, N. J.T., Are Theories of Imagery Theories of Imagination? An Active Perception Approach to Conscious Mental Content, *Cognitive Science*, 23, (1999): 209.

<sup>519</sup> Alan R. White, *The Language of Imagination*, (Oxford, Blackwell, 1990), 88–92.

<sup>520</sup> Theodore R, Sarbin, *Believed in Imaginings: A Narrative Approach*, in *Believed in Imaginings: The Narrative Construction of Reality*, Ed. Joseph de Rivera & Theodore R. Sarbine, (Washington D.C.: American Psychological Association, 1998), 18.

<sup>521</sup> Berys Gaut, *Creativity and Imagination*, in *The Creation of Art* ed. Berys Gaut, and Livingston, P. (Cambridge: Cambridge University press, 2003), 151.

multiple manifestations of imagination derive from a single mechanism or from multiple systems. Although imagination has many different manifestations, currently, it is still defined as a unitary concept, a single, general capacity. It is not classified and categorized by its variety functions and expressions. There is no taxonomy of its multiple manifestations and functions. At the same time, however, there is no unified theory of imagination, perhaps because constructing a clear conception of imagination faces countless difficulties. Indeed, it is hard to distinguish characteristics or features of imagining from other cognitive state because imaginative experience almost always involves or depends on other cognitive activities. In turn, because imagination has multiple manifestations which are not categorically distinct from other forms of mental reflection, it defies attempts either (a) to provide a unified account or definition of imagination, or (b) to distinguish it from other mental activities. Many questions thus remain. Does imagination involve a single faculty? Do all manifestations of imagination employ the same cognitive capacity, even though imagination serves different needs and has different roles? Are the different functions of imagination engaged in different cognitive processes? Does imagination take part diffusively in all other mental states? What is the ontology of imagination? How can we define its epistemology? How we to determine whether objects belong to imagination or to other processes such as memory?

Although imagination has not yet been differentiated into types, philosophers and cognitive psychologists have come to different conceptions of what imagination is. While philosophers try to delineate the concept of imagination, cognitive and neuroscientists examine the ways in which imagination is involved in other cognitive processes both phenomenologically and functionally. They investigate the roles that imagination may play in representing the past, understanding the self, empathizing with others, visualizing hypothetical situations, and envisioning the future. In

this chapter, I will investigate the epistemological status of imagination and its interaction with the process of remembering. In order to produce an inclusive clarification, we must examine psychological, neurobiological and philosophical perspectives. The creative feature is central ingredient in imagination. However, I will not deal here with the relationship between creativity and imagination since the focus of this research is to consider involvement of imagination in factual cognitive processes and especially in remembering and memories—not the role of imagination in creative endeavors that are clearly and intentionally distinguished from the real. Indeed, creativity derives from the constructive nature of imagination that, in turn, stems from the constructive nature of episodic memory, but creativity’s intentionally inventive feature distinguishes it from the real while other expressions of imagination might be strongly connected to the real in memories and in other cognitive processes. Thus, the focus of this chapter will be on imagination as it is assimilated in cognitive acts other than creativity.

### **The ontology of imagination**

Traditionally, imagination was contrasted to perception. According to Hume, the difference between imagination and perception is one of degree and not of nature, thus they differ in force and vivacity.<sup>522</sup> However, like with memory, criteria used to define imagination (such as intensity, vividness, voluntariness, and lack of relation to reality) were always disputed and did not successfully capture the varieties of imagination. What is relatively clear is that imagination is an imitative and reproductive function that enables the construction of mental images or proposition. In imagination, attention is directed away from the current external situation and is instead focused towards an internal representation, allowing one to form, conjure up, combine,

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<sup>522</sup> David Hume, *A Treatise of Human Nature*, Book I, part I, section I; Book I, part I, section III; and Book I, Part III, section V.

and organize mental images into novel combinations and coherent representations. An imagination always involves an object or set of objects that correlates with the imagined content. We do not imagine something general, but something particular captured through specific sensory modality such as visualizing, audializing, smelling, testing, kinaesthetic, and so on. These modalities can be combined (e.g. visual imagery can accompany motor imagery), though they rely on different neural systems.<sup>523</sup> By combining forms of real or unreal sensory input, we are able to represent what is absent, whether what is absent exists, is not present, or is fictional. For this reason, imagination does not have to be fictional, but can instead coincide with the representations of past occurrences or can be compatible with factual and real circumstances. Kendall L. Walton writes, “Most imaginings are in one way or another dependent on or aimed at or anchored in the real world.”<sup>524</sup> Or, for example, according to Stephan M. Kosslyn et al., “mental images are internal representations that are based on information stored in memory.”<sup>525</sup> However, whether imagining is fictive or compatible with the real, conjuring up sensory images is not a necessary condition for imagining to occur, since imagining can also happen linguistically. The Aristotelian view, which suggested that mental images serve as inner pictures, has been endorsed by subsequent philosophers.<sup>526</sup> However, in the 1980s and 1990s, a debate in cognitive psychology and philosophy occurred about the ontological status and the phenomenology of imagination (termed “mental imagery”). This “imagery debate” concerned the nature and the constitution of mental images, about which two theories emerged – the picture theory and the “weak percept”, or linguistic theory. The picture theory likens mental images to

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<sup>523</sup> Stephen M. Kosslyn, Giorgio Ganis and William L Thompson, “Multimodal Images in the Brain,” in *The Neurophysiological Foundations of Mental and Motor Imagery*, ed. Aymeric Guillot and Christian Collet, (Oxford: oxford university Press, 2010), 3- 9.

<sup>524</sup> Kendall, L. Walton, *Mimesis as Make Believe: On the Foundation of the Representational Arts*, 21.

<sup>525</sup> Kosslyn, Ganis and Thompson, *Multimodal Images in the Brain*, 3.

<sup>526</sup> Aristotle, *On the Soul*, 427b 19.

pictures and holds that our images represent in the manner of pictures. By contrast, the “weak percept” theory defines imaginings by means of linguistic description and propositional attitude. It claims that images represent in the manner of language.<sup>527</sup> Thus, although picturing and visualizing are central form of imagination, imagination can, according to this theory, also be conceived in a non-sensory way and manifested through linguistic description.

### **The “variety” definition of imagination**

Philosophical attempts to define imagination deal with the multiple abilities of imagination.

Edward S. Casey, in his phenomenological account of imagination, maintains “that imagination is an autonomous mental act: independent in status and free in action.”<sup>528</sup> He defines imagination by two features which distinguish it from other cognitive capacities. The first characterization is that imagination “is easily accessible to the imaginer and it is almost always successfully executed.”<sup>529</sup> Casey maintains that we can imagine whenever we want to, and that imagination is also available as an alternative to perceiving, remembering, or reflecting. He claims that, while other cognitive capacities usually exhibit a discrepancy between the initial intentions and their realization, in imagining, we manage to imagine exactly what we intend. However, these two characteristics fail to define imagination or to distinguish it from other cognitive processes.

Furthermore, imagination is not independent from other cognitive acts. Even when our imagination depicts a fictional scene, it relies on and utilizes content from episodic and semantic memory. Indeed, imagination can be an alternative or supplement to other cognitive acts such as remembering, reflection, and thinking, but it is not necessarily so. It can coincide partially (but

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<sup>527</sup> Michael, Tye, *The Imagery Debate*, (Cambridge: The MIT Press, 1991), 1-18. Amy Kind, *Putting the Image Back in Imagination*, *Philosophy and Phenomenological Research*, vol, LXII, 62, No 1, January (2001): 89-91.

<sup>528</sup> Edward S. Casey, *Imagining: A Phenomenological Study*, (Bloomington and London: Indiana University Press, 1976), ix.

<sup>529</sup> Casey, *Imagining: A Phenomenological Study*, 5-7.



also entirely) with these cognitive acts. Thus, a mental image is not always a pure imagination, distinct from other cognitive acts, but can also engage with these acts.

We also must add qualifications to Casey's second criterion, that imagination is always successfully executed. Most notably, what is the criterion for "successful imagination" and how can we determine if all forms of imagination have an initial intention? It might be that imagination in the form of fantasy (such as sexual fantasy) aims to compensate unfulfilled wishes, and thereby satisfy initial intentions. Moreover, there are many imaginations which are not necessarily regulated by our intentions and therefore do not realize initial intentions, but, rather, produce unconscious or unintended results. The intention that triggers or promotes an imagination is not necessarily initially determined, or might be determined and constructed concurrently during the process of imagination itself. In addition, when an intention is initially determined, it does not necessarily imply that an imagination is available; instead, relevant imaginary may be inaccessible and the imagining may be unsuccessful. One can fail to produce imaginative thoughts, just as one can fail to remember certain facts or events. Discrepancies can also emerge in imaginations, just as they can in memories, expectations, and predictions. Therefore, Casey's criteria of success or accessibility are not compelling characteristics.

However, in contrast to his earlier statement such as those quoted above, Casey later states that

“By imagining, we ascertain nothing that we did not know beforehand in some respect. What we take to be in the imagined object or event is only what we already, explicitly or implicitly know about it. Imaginative experience is

inherently circular in this regard, with the consequences that in imagining we cannot claim to confront anything radically new.”<sup>530</sup>

While he once claimed that imagination “is an autonomous mental act,” here, he claims the opposite—that imagination is not independent capacity, but depends on previous knowledge and other cognitive activities such as perceiving and remembering. Thus, not only does imagination depend on these processes, it is also not clear how we can distinguish imagination from remembering. Casey claims that imagination, which is based on preexisting knowledge, combines images in an original way and therefore leads to different representations. However, this description is not very different from the way current neuroscience describes episodic and autobiographical memories. Neuroscience maintains that episodic memories are organized dynamically and that every retrieval leads to the unconscious linking of different elements and thus to different representations. For this reason, Casey does not provide a criterion that would define imagination and distinguish it from other cognitive capacities, especially memory. He also overlooks the fact that imagination has variety of expressions and it is not only a connection of images, but also collaborates with episodic memory to represent what is possible or likely to happen. In addition, he later writes,

“It only shows that imagination may enter into close alliances with kindred acts such as memory and anticipation: the imaginer can draw on memory just as he can enact imagining in the context of anticipating.”<sup>531</sup>

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<sup>530</sup> Casey, *Imagining: A Phenomenological Study*, 7-8.

<sup>531</sup> Casey, 33.

Still, even though Casey claims that imagination incorporates elements from memories and anticipations, he insists that imagination is an independent mental act. However, how we might distinguish incorporation from dependency is not clear, since without cooperation with other faculties, imagination could not operate.

Casey looks further to identify imagination's eidetic structure, and its essential features. He singles out six features that are most pertinent to imagination.<sup>532</sup> He divides these features to three pairs. The first complementary pair is *spontaneity and controlledness*. Imaginations are characterized either as spontaneous, controlled, or both by the imaginer. Imaginations either appear on their own accord, spontaneously, or are consciously initiated and controlled by the imaginer.<sup>533</sup> The second pair of traits is self-containedness and self-evidence. By self-containedness, Casey means that an imagination does not refer to or imply other acts or content. Each imagination is self-enclosed; it does not depend on other elements for its wholeness. Self-contained memories do not imply other mental content and do not require additional details to clarify the imagination. Self-evidence is derivative of self-containedness, and means that the elements in the imagination are identifiable. The last pair of features is indeterminacy and possibility. Indeterminacy refers to indistinct or indeterminate content. For example, the background of an imagination might be vague or amorphous. When imaginations are characterized by vagueness, they can be indefinite, even if we recognize the central objects and can identify them. Possibility, in contrast, it means that the imagined content is possible (but not necessarily actual). Although Casey does not refer to imaginations as real or actual, he does characterize imaginations based on their plausible characteristics. These features, however, are

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<sup>532</sup> Casey, 33.

<sup>533</sup> Casey, 63-86.

not unique to imagination, and are also involved in other mental activities such as memory. They might describe some aspects of imagination but are not exclusive to imagination and therefore do not distinguish it from other cognitive processes.

In contrast to Casey, who focuses on the phenomenology of imagination, Leslie Stevenson provides a broader concept of imagination. In a paper entitled, 'Twelve conceptions of imagination' Stevenson illustrates the flexible and even contradictory epistemological character of imagination's aspects. Imagination's 12 conceptions range from referring to the ability to think of something real which is not presently perceived, to the general ability of thinking and entertaining mental images, to, in turn, the ability to imagine and invent creative and fictional objects and events. Stevenson extends his definition of imagination so much that it encompasses with other cognitive acts such as remembering, conceptualization, supposition, and even thinking itself. For example, the first conception coincides with the way we understand memory, expectation, or anticipation. He writes,

“The ability to think of something that is not presently perceived, but is, was or will be spatio-temporally real.”<sup>534</sup>

Stevenson's first conception states that imagination is about something which is not presently perceived, but exists and is real. Imagination is thinking about things that took place in the past, take place in the present, or will take place in the future, but are currently absent from the perceptual field. This conception refers to an event or object which

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<sup>534</sup> Leslie Stevenson, Twelve Conception of Imagination, *British Journal of Aesthetics*, vol 43, no. 3, July (2003): 239.

“is real enough, but cannot presently be perceived by the subject—it may be in the past, or though presently existing it may be spatially inaccessible, or perhaps it does not yet exist, but is forthcoming in the future.”<sup>535</sup>

That is, the first conception of imagination coincides with memory or with expectations for the future. We imagine something that is real but just not actually present before us in the spatio-temporal world. Stevenson apparently provides clarification for the memory/imagination dichotomy. He writes that imagination

“is an indirect causal connection between one’s previous encounter(s) with the object and one’s present thought of it”.<sup>536</sup>

Imagination, in a sense, relies on indirect information that one has received from other time, information that can also be in the form of inferences. This distinction, however, does not rule out the possibility that memory and imagination are sometimes congruent, since both episodic and semantic memories can also be indirect representations of past events. From Stevenson’s first conception, a sub-definition is derived:

“1a. The ability to think of something that one has previously perceived (but is not currently perceiving).”<sup>537</sup>

This sub-definition refers to the function of memory more explicitly. Stevenson attributes imagination realness and existence—the same features of memories, which are representations of

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<sup>535</sup> Stevenson, 239.

<sup>536</sup> Stevenson, 239. See also G. Evans, *The Varieties of Reference* (Oxford: Clarendon Press, 1982), 121-138.

<sup>537</sup> Stevenson, 239.

previous experiences. The first conception has further ramifications that refer for example to semantic memory:

“One can also think of things one has only heard about by testimony. In such cases there is a causal connection which is yet more indirect (the information may have passed through many minds, perhaps over centuries): 1b. The ability to think of something that one has never perceived, but which others have perceived and told one about.”<sup>538</sup>

This definition of imagination relates to semantic memory, which is defined as knowledge that was transferred to us without us directly experiencing it. He writes,

“In another kind of ‘absence,’ one thinks of something that one infers must have existed, or must exist elsewhere, or will exist in the future. Such is the stock in trade of cosmologists, geologists, paleontologists, archaeologists, detectives, investors, and weather forecasters: 1c. The ability to think of something that one has never perceived and that no one has told one about, whose existence one infers from perceived evidence by induction, or scientific method in a wider sense.”<sup>539</sup>

Stevenson’s third conception is here relevant as it characterizes imagination as false memory,

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<sup>538</sup> Stevenson, 240.

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“(3) The liability to think of something that the subject believes to be real, but which is not.”<sup>540</sup>

This conception refers to cases in which we imagine something and our belief is committed to its realness in a mistaken and false fashion. This conception indicates problems in distinguishing false memory and imagination. Criterion six suggests an even more general conception of the imagination,

“(6) The ability to think of anything at all.”<sup>541</sup>

This conception attributes imagination with the general ability to think. This may be so since thinking itself implies holding in mind something independently from the phenomenon’s existence in the world. Stevenson also attributes to imagination

“The ability to think of something that one has never perceived and that no one has told one about, whose existence one infers from perceived by induction, or scientific method in a wider sense.”<sup>542</sup>

This criterion defines imagination as the ability to think, and to infer insights and generalizations. Other concepts of imagination described by Stevenson refer to its fictional and creative element and to aesthetic experience. Criterion 8 is another general conception that includes functions that are ascribed to memory,

“The ability to form perceptual beliefs about public objects in space and time.”

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<sup>540</sup> Stevenson, 242.

<sup>541</sup> Stevenson, 245.

<sup>542</sup> Stevenson, 240.

This criterion claims that imagination forms belief on the basis of perceptual experience.<sup>543</sup> The general common characteristic of all these conceptions is

“The ability to form beliefs, on the basis of perception, about public objects in three-dimensional space which can exist unperceived, with spatial parts and temporal duration.”<sup>544</sup>

Overall, then, Stevenson's twelve conceptions are so broad so as to include many other cognitive processes. These twelve conceptions of imagination suggest that imagining might encompasses all forms of thinking that considers things not present to the senses, all forms of reflections and thinking except perceiving. As a result, Stevenson's definition may offer necessary conditions for imagining, but does not identify sufficient conditions that would define imagination as a process unique from remembering and inferring.

In contrast to Stevenson's inclusive definition, Berys Gaut provides a stricter notion of imagination.<sup>545</sup> Gaut mainly discusses the relation between imagination and creativity, but also describes imagination as false belief or misperception:

“In one such use, to say that I imagined such and such is to say that I falsely believed it, or to say that I misperceived something: for instance, to say that I imagined the coat rack to be an intruder is to say that I misperceived the coat rack

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<sup>543</sup> This conception is also characteristic of Kant's philosophy.

<sup>544</sup> Stevenson, 249.

<sup>545</sup> Gaut, (2003),148–73.



as an intruder. In this use, imagination involves false (propositional or perceptual) beliefs.”<sup>546</sup>

He then describes two components of imagination that are relevant here. He defines imagination in terms of lack of commitment to belief and action. As discussed in the Husserl chapter, Husserl claims that mental acts can share the same content, and therefore what distinguishes different representations of the same content is the way our consciousness intends the object—i.e. the relation between the act of intention and the experience. Cognitive acts intend events or objects differently, and it is the act of intention (the “apprehension”) that determines the individual’s relation to an experience and, in turn, distinguishes one mental process from another. In using slightly different terminology, Gaut maintains that mental acts involve a certain “propositional attitude” or “mode of presentation.” He attributes to intention different meaning than did Husserl: for Husserl, intention means the way our mental acts are directed towards objects or experiences, while for Gaut, intention is an attitude such as belief or imagination. Gaut contrasts the propositional attitude of imagination with the propositional attitude of belief and intention. Belief involves a commitment to the truth of a mental proposition, whereas intention involves a commitment to action, since to intend something is to commit oneself to act in a certain way. Using these ideas, Gaut identifies the propositional attitude of imagination as a proposition without commitment to the truth or falsity of an imagined scenario, and to its existence or non-existence. Imagination is thus an intentional state free of commitments to truth and action. Thus, whereas remembering entails commitment to the past existence and veracity of its content, Gaut defines imagination as cognitive activity lacking such an attitude of assertion. In imagination, the

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<sup>546</sup> Gaut, (2003), 151.

individual is not committed to the veracity vs. falsity and existence vs. non-existence of the imagined content. Gaut writes,

“to believe a proposition is to be committed to its truth. Belief therefore aims at the truth; moreover, this end is intrinsic to or constitutive of belief: a propositional attitude counts as belief only if it has that end. (Of course, belief may not succeed in achieving this end – there are false beliefs – but belief is what it is because it has this end). It is the fact that belief has the intrinsic end of truth... it is because belief aims at the true that it is properly responsive to evidence, that is, to reasons for holding something to be true.”<sup>547</sup>

And,

“Since assertion is strictly speaking a speech-act, not a propositional attitude, ‘assertion’ should be understood in terms of commitment to the truth or falsity of a proposition (alethic commitment) in the way just outlined. These equivalent ways of presenting the view all have an important corollary: it is possible both to believe that p and to imagine that p, since one can consistently have the two distinct propositional attitudes towards the same proposition.”<sup>548</sup>

Here, Gaut makes a distinction between imagining and believing. In belief, the individual is committed to the truth (or falsity) of the mental content, while in imagination, no such commitment exists. Thus, Gaut argues that we cannot believe something without being committed to its truth or existence, but we can imagine something without such commitment.

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<sup>547</sup> Berys Gaut, (2003), 161.

<sup>548</sup> Berys Gaut, (2003), 153.

This formulation, however, raises the question whether the criteria for imagination indeed identify and distinguish it from other cognitive acts. In Gaut's formulations, imagination, among others, entails false belief, a misperception of the reality where a belief does not correspond with reality. However, false belief, even if it stem from misperception, involves a commitment to the truth and existence of mental content. In Gaut's example—confusing a coat for intruder—imagination and belief coincide. Thus, since false belief is an instance of imagination, this example shows that I can imagine something while being firmly committed either to its existence or non-existence, truth or falsity. However, not only does imagination in the form of false belief exhibit commitment to veracity and existential status, moreover, it seems that there are few situations when the individual is not committed to the truth or falsity, existence or non-existence of imagined content. For example, if we imagine an idea or invention that has not yet been invented (such as a cloth with various possible functions such as regulating the temperature of the body) we would be committed in our imagination to its inexistence. We know that such objects are imagined and do not exist. Or, in another example, after a soccer game in which our performance was bad, we might imagine ourselves scoring a goal. However, we are fully committed to the epistemological state of this imagination, which we definitely know is false. It is true that in some cases, we might have doubts about the existence or non-existence of an imagined scenario, but even in these cases, there is commitment to insecurity regarding the truth value and existence of the content.

Thus, Gaut's criteria do not enable us to distinguish cases when we are committed to truth and existence in believing and imagining. Characterizing imagining as a state in which there is no commitment to existence or non-existence and truth or falsity of its content excludes imaginings for which we are firmly committed. There are many instances of imagining in which we are

committed to the non-existence or falsity of the imagination. We are committed to the falsity of objects such as unicorns, and to narratives such as Little Red Riding Hood. In short, if we follow Gaut and characterize imagination as a state in which there is no commitment to the existence or nonexistence, truthfulness or falsity of its content, we must exclude imaginings that one firmly identifies as existing or non-existing, true or false, even though there are many such instances (such as the above unicorns and stories). Furthermore, in another example, a sexual fantasy of marital infidelity has no bearing on our real commitments, and on other occasions, there are imaginings to which we are partially or entirely committed as true and exist. Thus, we may imagine a future ecological catastrophe and insist that it can very plausibly take place.

Together, both Stevenson and Gaut define imagining as a form of thinking. While Stevenson defines imagining as thinking of something that is not present to the senses, Gaut defines imagining as thinking of something without commitment to its truth or falsity, existence or non-existence. Gaut's definition of imagining distinguishes it from perceiving and remembering, but also excludes instances of imagining when we are committed to an imagining's existence or non-existence, truth or falsity. These definitions, then, fail to provide necessary and sufficient conditions for designating something as imagination. They do not provide us with an exclusive definition of imagination, nor do they present effective criteria by which we can identify instances of imagination.

### **Multiple cognitive manifestations of imagination**

The general and wide-ranging definitions philosophers attribute to imagination derive from its multiple manifestations and functions. Imagining does not denote a specific kind of mental activity, but, rather, involves different cognitive processes and experiences. Imagination, for

example, has been used as a synonym for visualization, entertaining thoughts, conceiving, assuming,<sup>549</sup> simulating, pretending, supposing, and daydreaming.<sup>550</sup> Stretching its boundaries further, philosophers and cognitive scientists also often consider imagination to be involved in drawing inferences, thinking of possibilities, pretending, guessing, suspecting, speculating, and forming desires, beliefs, interpretations, and counterfactual alternatives to reality. However, even this list does not exhaust imagination's many uses and functions. Imagination is also involved in cognitive processes such as remembering, future planning, speculating, anticipating, and expecting. We use imagination to think up new possibilities, offer fresh perspectives on what is familiar, make fruitful connections between apparently disparate ideas, elaborate original ways of seeing or doing things, project ourselves into unusual situations, and so on. Imagination is also linked with false perceptions, false belief, confabulation, distortions of the past, and mistakes of memory. Though in many cases, these activities are interchangeable, with imagination being congruent with these processes, imagination as a concept is not fully identical with these concepts. To the contrary, imagination is not equivalent with these attitudes, but is assimilated, incorporated, and involved in these cognitive processes. It is not clear whether all these self-projective processes derive from imagination, thus, whether they are forms of imagination or whether they have close relationship with imagination but remain distinct processes. However, whether they are forms of or simply engage with imagination, these cognitive processes exhibit different degrees of belief and commitment. That is, imagination exhibits different limitations and constraints that are determined by the specific form of reflection associated or involved with the imagination. The link between imagination and the specific form of reflection determines its

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<sup>549</sup> Gregory Currie and Ian Ravenscroft, *Recreative Minds: Imagination in Philosophy and Psychology*, (Oxford: Clarendon Press, 2002), 8.

<sup>550</sup>See Amy Kind, *Putting the Image Back in Imagination*, *Philosophy and Phenomenological Research*, vol, LXII, No 1, January 2001, 87. See also Zeno Vendler, *The Matter of Mind*,(Oxford: Clarendon press, 1984), 61.

constraints. When imagination, for example, is linked with anticipations or expectations, it is constrained to form specific predictions that are logically induced from previous experiences. When imagination involves counterfactual alternatives, it is mostly restricted to late and reasonable counterfactual possibilities rather than early or impossible ones. For example, for a sequence of events leading to an injury, people will imagine alternative events which are both late in the sequence and reasonable rather than early or more fanciful alternatives (a topic that we will later consider). In other forms of imagination (such as fantasy), imagination is not similarly constrained by temporality or reason and is instead constrained by other factors (such as emotional needs). Likewise, in hallucinations and illusion, imagination draws us from reality and distorts the distinction between the real and the imagined. Thus, hallucination and delusion entail attributing the imagined content with the belief that the imagined events took place, leading to a false perception or false memory of the past event. This form of imagination lacks a rational structure and is a feature of disordered perception (e.g. schizophrenia).<sup>551</sup> Thus, because imagination is engaged with multiple cognitive processes, it is also employed in multiple functions, each of which has unique constraints.

Just as it entails many cognitive functions, imagination serves a range of practical activities. For example, we use imagination to cope with our environment and past experiences in a more developed, prepared, and creative way, and to come to grip with painful feelings or difficult situations. According to Zeno Vendler, imagination saves us from solipsism by enabling us conceive of other minds.<sup>552</sup> Imagination enables us not to be tied only to our own consciousness but to penetrate and understand other minds via inter-subjective transference. Imagination helps

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<sup>551</sup> Gregory, Currie, *Imagination, Delusion, and Hallucinations*, in *Pathologies of Belief*, ed. Max Colheart and Martin Davies, (Oxford: Blackwell, 2000), 167-169.

<sup>552</sup> Zeno Vendler, *The Matter of minds*, (Oxford: Clarendon Press, 1984), 11.

us transcend ourselves and to imagine how it must be like somebody or something else, and to imagine the feelings, sensations, and emotions of others.<sup>553</sup> Imagination, according to Vendler, also helps consider what is or is not possible, thereby serving as a crucial tool in imagining possible future situation. It provides us the ability to envision and accommodate to possible events of the approaching future. Thus, it enables us to think of possibilities beyond the evidence that stems from immediate knowledge, to modify the present and shape the future. Gregory Currie and Ian Ravenscroft emphasize a similar element of imagination, characterizing it in terms of “projection” and “perspective- shifting.” They describe imagination as the

“capacity to put ourselves in the place of another, or in the place of our own future, past, or counterfactual self: seeing, thinking about, and responding to the world as the other sees, thinks about, and responds to it.”<sup>554</sup>

Imagination enables us to repeat and examine past experiences, allowing us to rearrange and to better understand them. In this way, imagination is part of the adaptive mechanism that draws from the present and enables us to form mental alternatives, predict or plan the future, and rethink the past for future uses. Gregory Currie and Ian Ravenscroft also maintain that imagination is the realm where one can represent goals and entertain possibilities or desires.<sup>555</sup> These imaginations are generative fantasies of desirable scenarios, some of which are

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<sup>553</sup> Vendler, 1984, 1-23.

<sup>554</sup> Gregory Currie and Ian Ravenscroft, *Recreative Minds: Imagination in Philosophy and Psychology* (Oxford: Clarendon Press, 2002), 8

<sup>555</sup> Currie and Ravenscroft, 2002, 7.

incorporated into our life.<sup>556</sup> Currie and Ravenscroft also characterize imagination as a substitute for other attitudes and cognitive acts such as perception, memory, belief, and desire. They write,

“it [imagination] involves the having of states that are not beliefs, desires, or perceptions but are like them in various ways.”<sup>557</sup>

Or

“an account of imaginative projection requires us to give an account of a range of states that are imaginative substitutes for beliefs, desires and perceptions, and possibly for other things as well.”<sup>558</sup>

For them, imaginations imitate and reproduce other states such as perception, belief, decision, and experience. Imaginations can be perception-like, belief-like imaginings, and so on. Indeed, Currie also writes

“imaginings are essentially simulative states - states which mirror some of the features of other mental states, of which they can be regarded as counterparts.”<sup>559</sup>

An example of when imagination serves as a substitute representation for sense experience is when, before I go to the dentist, I imagine the pain that I might have. This imagining functions as a substitute for the expected sensual experience of pain. Even though this imagining is a substitute, the emotions that are involved in it are not necessarily less intense than the emotions

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<sup>556</sup> Ethel Spector Person, “The Creative Role of Fantasy in Adaptation,” in *Imagination and its Pathologies*, (Cambridge: MIT Press, 2003), 111-132.

<sup>557</sup> Currie, and Ravenscroft, 2002, 2.

<sup>558</sup> Currie and Ravenscroft, 2002, 8.

<sup>559</sup> Currie, 2000,175.



involved in the “real” mental state. Imagination also functions to supplement partial perceiving. When we see an object, we see it only partially from a specific position. We can see one side of this object, but not the concealed parts. However, even though our perceptions are necessarily limited, we still perceive objects in a holistic way because imagination supplements the missing perceptual field. Relying on preexisting knowledge from semantic memory, we imagine the elements absent from our perceptual field in an automatic and unconscious process.

Imagination does not only allow us to project other situations and possibilities, but also fulfills emotional and narcissistic needs. We narrate and form a sense of self by imagining our past with additional attitudes and perspectives. According to psychoanalysis, imagination is defined as fantasy that serves as a camouflage and defense against repressed and unbearable illicit desire.<sup>560</sup> Fantasy represents these unconscious drives and desires, providing escape from external reality as it gives compensation for unfulfilled needs and substitute gratification for unresolved or repressed wishes.<sup>561</sup> Thus, imagination serves emotional purposes, providing narcissistic needs, and enabling ego enhancement. Fantasy serves still other pragmatic emotional purposes such as providing solace in pain or helping to cope with difficult situations. Likewise, fantasy has a creative and adaptive emotional function. Ethel Spector Person writes,

“Fantasy plays a role in guiding the choices and adaptations we make and the relationships we form. Fantasies are among the most powerful of the catalysts that infuse and organize our lives, dictating romantic, familial and professional goals, fueling behaviors, engendering plans for the future.”<sup>562</sup>

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<sup>560</sup> Ethel Spector Person, 2003, 114.

<sup>561</sup> Freud, *Creative Writers and Day Dreaming*, 146.

<sup>562</sup> Ethel Spector Person, 2003, 114.

Thus, due to imagination's intangible characteristics and the fact that it is engaged in variety cognitive processes and functions, philosophical accounts of imagination denote a general ability whose the only agreed characteristic is that it entails thinking of something that is not present to the senses. However, for this reason, philosophical attempts to define imagination do not provide necessary and sufficient conditions for something being imagination. Rather, these broad definitions include other cognitive acts as well.

Shifting from philosophical accounts of imagination to current cognitive and neuroscientist examinations, we find that these cognitive definitions include aspects both similar and different from philosophical accounts. Indeed, neuroscientists also provide general definition and delineate imagination in contrast to perception. It is a mechanism that maintains content that differs from the immediate experiences. For example, according to Agnati F. Luigi et al.,

*“Imagination usually indicates the faculty of creating mental images and constructs of a novel character, a capability that appears to be especially developed in humans .... we speculate that it can be the result of a “tinkering” that combines and modifies stored perceptual information and concepts leading to the creation of novel “mental objects” that are shaped by the subject peculiar inner world.”*<sup>563</sup>

However, unlike philosophers, neuroscientists do not investigate imagination as a general faculty, or concept, but instead dismantle it to various functions and forms. Neuroscientists do

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<sup>563</sup> Agnati F. Luigi, et al., “The Neurobiology of Imagination: Possible Role of Interaction-Dominant Dynamics and Default Mode Network,” *Front Psychol*,4:296, (2013): 1, accessed May 24, 2013, doi: 10.3389/fpsyg.2013.00296.

attribute to imagination a variety of roles and functions, but examine only one of these aspects at a time, framing the general imaginative activity and linking it to a specific process. Alan Richardson describes the current attitude of cognitive psychologists and neuroscientists to imagination as utilitarian approach.<sup>564</sup>

He writes,

“Yet this human imaginative capacity seems strangely attenuated—one might even say tamed—in the accounts of many cognitive scientists, some of whom deliberately seek to render the imagination rule bound and quotidian.”<sup>565</sup>

Here is not the place to consider whether this description of imagination as attenuated is accurate. However, this attitude shows the inability of scientists to investigate or tackle imagination as a general ability or faculty. Therefore, neuroscientists do seem to dismantle the general capacity of imagination and examine its discrete functions in relation to other cognitive acts and processes. Yet splitting imagination into various separate cognitive functions does not resolve the question whether there are different kinds of imagination, or whether imagination’s different functions are manifestations of a single faculty. In the following, I examine the cognitive processes that are involved with imagination.

### **Self-projection**

One manifestation of imagination is self-projection, a function that underlies various mental processes. For example, self-projection entails imagining the self in other times, with other perspectives, or through alternate situations. It is the ability of temporarily

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<sup>564</sup> Alan Richardson, *Defaulting to Fiction: Neuroscience Rediscovered the Romantic Imagination*, *Poetic Today*, vol 32, issue 4, winter (2011): 669.

<sup>565</sup> Alan Richardson, 2011, 665.

“setting current reality to one side and constructing a situation model pertaining to a different spatio-temporal locus.”<sup>566</sup>

For Currie and Ravenscroft, self-projection is

“the obvious function of the imagination: enabling us to project ourselves into another situation and to see, or think about, the world from another perspective.”<sup>567</sup>

Thus, it is the

“capacity to put ourselves in the place of another, or in the place of our own future, past, or counterfactual self: seeing, thinking about, and responding to the world as the other sees, thinks about, and responds to it”<sup>568</sup>

Likewise, according to R.L. Buckner, and Daniel C. Carroll,

“self projection has many uses and underlies the flexibility of human cognition and behavior; it equips us with abilities to make social inferences and anticipate the beliefs and actions of others.”<sup>569</sup>

According to these thinkers, then, self-projection refers to the ability to shift perspective from the immediate present towards the past and the future and to alternative perspectives, aiding in problem solving, planning tasks, simulating possible situations, and imagining what others think. It involves imagining scenarios beyond the here and now to other times and places. Buckner and

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<sup>566</sup> Paul. L. Harris, *The Work of Imagination*, 194.

<sup>567</sup> Currie, and Ravenscroft, 2002, 1.

<sup>568</sup> Currie, and Ravenscroft, 2002, 8.

<sup>569</sup> Buckner, and Carroll, 2006, 49.

Carroll attribute four cognitive abilities to self-projection: remembering the past (episodic memory), thinking about the future (prospection), conceiving the viewpoint of others (theory of mind), and, lastly, navigation. These four forms rely on autobiographical information and are constructed to consider an alternative perspective, or, in the case of theory of mind, a mental simulation that considers another individual's perspective.<sup>570</sup> Cognitive scientists hypothesize that the multiple forms of self-projection probably share a common brain network. This network involves frontal and medial temporal parietal lobe systems that are linked to planning and episodic memory. They hypothesize that this network enables mental exploration of alternative perspectives that are based on our past experiences.<sup>571</sup>

### **Imagination as supposition**

Supposition is a specific manifestation of self-projection. It is a constructive non-pictorial form of alternative representation that involves thinking of possibilities, general assumptions, hypotheses, expectations, and anticipations. In short, supposition allows for representations that exceed beyond the here and now towards the possible. It is related to expectations about that something is supposed to be or happen. In contrast to pure imagination that entertains fictive representations, supposition assumes more commitment to certainty than imagination as it is bounded to a specific state of affair. We entertain hypotheses, expectations, and anticipations usually only if they seem plausible and reasonable.

There is, however, some debate about the precise relationship between supposition and imagination. Alan White argues against the view that imagination and supposition are equivalent, maintaining that supposition lacks the features characteristic of imagination. He argues that,

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<sup>570</sup> Buckner, and Carroll, 2006, 49.

<sup>571</sup> Buckner, and Carroll, 2006, 49-57.

while imagination denotes the ability and the capacity to visualize what is not present to the senses, supposition is not judged in terms of capacity, since we cannot refer to supposition in terms of success or failure. White maintains that we do not fail or succeed in supposition while we can fail to imagine an event or image.<sup>572</sup> According to White, another difference is that, while imagination can be characterized by vividness, richness, dullness, or originality, supposition cannot be attributed these features. There is no poor, original, or inventive supposition, but there can be poor, original, or inventive imaginings.<sup>573</sup> Another criterion used to distinguish supposition from imagination is that supposition is or is not justified as false or true. When an imagined scenario is clearly reasonable and possible, we tend to think of this act as one of supposing, rather than imagining. Supposition is something that we agree or disagree with and view as plausible or implausible, justified or unjustified. It can be mistaken or accurately predictive. Thus, suppositions which are oriented toward the future are constrained by logical and inferential relation to the past. Commitment to a hypothesis is justified by a preceding past, whereas pure imagination can reflect a possibility that cannot necessarily be inferred from the past or the current state of things, and, therefore, may represent an impossibility. Just as supposition is constrained by deduction from the past and the logical relation of this deduction to assumptions about the future, pure imagination is also constrained. However, it is constrained not necessarily by relying on logical inference from the past, but, rather, by the logical relation between the different components of the given imagination. One can easily conceive of a wrong supposition, but a wrong imagination requires more clarification. At the very least, these forms of failure have different implications, since a wrong supposition means failure in prediction, while a “wrong” imagining may mean straying from the individual’s initial intention to imagine

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<sup>572</sup> Alan R. White, 1990, 137–8, 141–2.

<sup>573</sup> Alan R. White, 1990, 135-148.

a specific thing. Imagination is beyond the dichotomy of true or false, of being justified or unjustified.<sup>574</sup>

Irrespective of whether White's criteria are true and succeed at distinguishing imagination from supposition, it is important to mention that White's criteria do not rule out that supposition is a type of imagination which specifically complies with the constraints of logical justification.

Overall, then, these features do not exclude the possibility that imagination and supposition are partially equivalent, and that there may be cases where supposition and imagination are interchangeable and therefore indistinguishable. However, since imagination is a broader concept and phenomena, the two are not identical. Supposition entails rational and causal relations between a real past occurrence and a possible future occurrence, whereas pure imagination is not constrained by commitment to either the real past or future. Moreover, we most often refer to ourselves in supposition, since we feel more confident about the realness of our past experiences, a confidence not matched when imagining the experiences of others. When considering others' experiences, we will refer to mental process as imagining. For example, when we will ask someone, "What do you suppose you will do if you see a person lying on the pavement in the middle of the day," he will probably raise some hypothesis and suppositions, but when we ask the same question about a third-person observer, saying, "Can you imagine what that observer will do if he sees someone lying on the pavement in the middle of the day," we would not consider this process supposition. This example shows that, even though supposition and imagination both can refer to hypothetical situations, supposition entails commitment to lived experience, while imagination is freer, having fewer of such commitments.

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<sup>574</sup> Alan R. White, 1990, 136.

## **Imagination as counterfactual alternative**

Imagination also enables us to form and think of counterfactual alternatives to reality—how an event might have turned out differently. According to N.J. Roese, et al, counterfactual alternatives

“are imaginative constructions fabricated from stored representations, typically embracing a blend of traces from both episodic and semantic memory.”<sup>575</sup>

Counterfactual imaginations counter established facts derived from episodic memories.<sup>576</sup> They exceed real experiences with conscious thoughts that consider what might have been.<sup>577</sup> This form of imagining occurs by consciously reconstructing episodic memories (in contrast to the unconscious construction of episodic memories that occurs continually). Roese et al. maintain that counterfactual imagination also makes use of semantic memory, since this form of imagination is drawn from our general conceptual knowledge about the world.<sup>578</sup> Combining elements from memory and imagination, counterfactual reconstructions may be motivated by the emotional need to overcome tragic occurrences, dissatisfaction, or disappointment. They also involve changes in the representation of reality, changes that account for how occurrences could have turned out differently. Counterfactual imaginations are, in turn, conceptualized as conditional propositions such as “only if”. Yet like other forms of imagination, counterfactual imagination has constraints and limitations. Counterfactual imaginings consider true imaginative possibilities, as opposed to impossible or fantastic events that could never happen. Indeed,

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<sup>575</sup> N. J. Roese, Sanna L. J. and Galinsky A. D., “The Mechanic of Imagination: Automaticity and counterfactual thinking,” in *The New Unconscious*, ed. R. Hassin, J. Uleman and J.A. Bargh, ( New York: Oxford University, 2005), 138.

<sup>576</sup> N. J. Roese, “The Functional Basis of Counterfactual thinking”, *Journal of Personality and Social Psychology*, 66, (1994), 805-818.

<sup>577</sup> N. J. Roese, “Counterfactual Thinking”, *Psychological Bulletin*, 121, (1997): 133-134.

<sup>578</sup> Roese, Sanna, and Galinsky, 2005, 138.



people create possible alternatives that make minimal alterations to the factual past. Thus, counterfactual imaginations are bound to the possibilities existing within rational reality.<sup>579</sup> Usually, counterfactual alternatives modify only one aspect of the past that seems to be especially crucial for the outcome being reconsidered. This crucial aspect is usually an event occurring late in the causal chain of occurrences.<sup>580</sup> Counterfactual alternatives need not only reconsider significant events, but can also reconsider mundane happenings. In all forms of counterfactual reconsideration, the construction process generates new representations that are unconsciously stored and preserved.

### **Prospection: Imagining future scenario**

Another manifestation of imaginative self-projection is prospection—the act of thinking and imagining a possible future.<sup>581</sup> Closely related to supposition, this process consists of imagining the upcoming future of others or ourselves and requires mental projection into future situation. Cognitive neuroscientists who study the neural mechanism underlying episodic memory conjecture that the neural system allowing the reconstruction of episodic memory (i.e. the ability to flexibly recombine and reassemble the stored components of episodic memory) also underpins the ability to mentally simulate future scenarios, whether temporal or hypothetical pre-experienced events.<sup>582</sup> Thus, imagining future scenarios and constructing hypothetical situations

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<sup>579</sup> Ruth M. J. Byrne, *The Rational Imagination: How people Create Alternatives to Reality*, (Cambridge: The MIT Press). 2005, 10-11.

<sup>580</sup> Byrne, 2005, *The Rational Imagination*, 157-180.

<sup>581</sup> Thomas Suddendorf and Michael C. Corballis, *The Evolution of Foresight: What is Mental Time Travel, and is it Unique to Humans?* *Behavioral and Brain Sciences* (2007):30, 299–351.

<sup>582</sup> Debis Hassabis, et al., “Patients with Hippocampal Amnesia Cannot Imagine New Experiences”, *Proc. Natl Acad. Sci.*, 104, (2007):1726–1731; Demis Hassabis, Maguire E.A., “Deconstructing Episodic Memory with Construction,” *Trends Cogn. Sci.* 11 (2007): 299–306; Demis Hassabis and Eleanor A. Maguire, “The Construction System of the Brain,” *Phil. Trans. R. Soc. B* 364, (2009):1263-1271; Daniel L. Schacter and Addis D.R., *The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future*, (2007):773–786; Endel Tulving, *Elements of Episodic Memory*, (Oxford: Clarendon Press, 1983); Endel Tulving, *Episodic*,

have much in common with the reconstructive process of episodic memory: both past and future experiences draw on information stored in episodic memory and engage some of the same neural regions.<sup>583</sup> Thus, the act of projecting into the future and imagining of what might be is a form of episodic prospection that parallels to episodic memory of the past. This prospective ability has also been called mental time travel in order to emphasize the generative ability of this cognitive process that allows for shifting beyond the present to relive, examine, or repeat our past, and, alternatively, to project forwards, imagining, foreseeing, planning and shaping a potential future.<sup>584</sup> Because we incorporate elements from the past and present to shape memories of past events according to expectations regarding the future, mental time travel into the past shares cognitive resources with mental construction of potential future episodes.<sup>585</sup> Tulving and other neuropsychologists refer to this subjective awareness of one's protracted existence across time as "autonoetic consciousness." Simulation of future events can be divided to several forms. Just like for memory, we can classify prospective memory into memories of episodic, specific and particular events, and to semantic prospective knowledge. Thus, mental time travel into the future might include the planning of some specific events such as a meeting, dinner party, or a job interview. However, mental time travel to the future also includes prospective semantic

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"Memory and Autonoesis: Uniquely Human?" in *The Missing Link in Cognition*, Ed. H. S. Terrace, & J. Metcalfe, (New York: Oxford University Press, 2005), 4-56.

<sup>583</sup> Schacter and Addis, "The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future", 773–786. R. S. Rosenbaum et al., "The case of K.C.: Contributions of a Memory-Impaired Person to Memory Theory", *Neuropsychologia*, 43, (2005): 989–1021.

<sup>584</sup> Buckner, R.L., and Daniel C. Carroll, 2006, 49.

<sup>585</sup> Thomas Suddendorf and M. C., Corballis, *Mental Time Travel and the Evolution of the Human Mind*, *Genet. Soc. Gen. Psychol. Monogr.* 123, (1997): 133–167.

knowledge such as knowing that some event, like the sunset, will occur.<sup>586</sup> Thomas Suddendorf maintains that

“the mental reconstruction of past events and construction of future ones may have been responsible for the concept of time itself, and the understanding of continuity between past and future. Mental time travel allows us to imagine events at different points along this continuum, even at points prior to birth or after death.”<sup>587</sup>

Overall, episodic memory and imagining the future share phenomenological characteristics and activate similar parts of the brain.<sup>588</sup> Imagined prospective experiences are associated with increased activity in many of the same brain areas that support episodic and autobiographical memories.<sup>589</sup> These brain networks include the hippocampus, parahippocampal gyrus, posterior parietal cortices, and middle temporal cortices,<sup>590</sup> regions that facilitate reassembling the constituent features of a memory,<sup>591</sup> predicting the future, imagining, and navigating. In the constructive episodic simulation hypothesis, neuroscientists explain the reconstructive characteristic of episodic memory vis-à-vis its adaptive features for the future. Schacter, for example, writes that the constructive nature of episodic memory functions to

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<sup>586</sup> Thomas Suddendorf, “The Evolution of Foresight: What is Mental Time Travel, and is It Unique to Humans?” *Behavioral and Brain Sciences* 30, (2007): 299–351.

<sup>587</sup> Suddendorf, 2007, 299.

<sup>588</sup> Yadin Dudai and Carruthers M, “The Janus Face of Mnemosyne”, *Nature*, 434, (2005), 567; Thomas Suddendorf and Busby J., “Mental time travel in animals?” *Trends Cogn. Sci.* 7, (2003): 391–396; Suddendorf and Corballis, 1997, 133–167; Suddendorf, 2007, 299–351. Tulving, 2005, 4-56.

<sup>589</sup> Buckner and Carroll, 2006, 49-57; Hassabis and Maguire, 2007, 299–306; Hassabis and Maguire, 2009, 1263-1271.

<sup>590</sup> Scoville W.B., Milner B., “Loss of Recent Memory After Bilateral Hippocampal Lesions,” *J. Neurol. Neurosurg. Psychiatry*, 20, (1957): 11–21.

<sup>591</sup> David Marr, “Simple Memory: A Theory for Archicortex,” *Phil. Trans. R. Soc. B.* 262, (1971): 23–81.

“allow individuals to simulate or imagine future episodes, happenings and scenarios. Since the future is not an exact repetition of the past, simulation of future episodes requires a system that can draw on the past in a manner that flexibly extracts and recombines elements of previous experiences. Consistent with this *constructive episodic simulation* hypothesis, we consider cognitive, neuropsychological and neuroimaging evidence showing that there is considerable overlap in the psychological and neural processes involved in remembering the past and imagining the future.”<sup>592</sup>

Both constructing of past events and imagining the future involve reactivation, and integrative manipulation of semantic, contextual and sensory components shared across multiple episodic memories. While both require the flexible integration of many elements, prospection and memory also, as we have seen, reflect the workings of the same core brain network. Thus, remembering the past and imaging the future take place in the same structure alternatively known as the remembering-imaging system or the remembering-imagining window.<sup>593</sup> In this system, anticipated future experiences and specific memories of recent experiences constitute a window of episodic consciousness that functions to keep us tightly connected to our current goals and plans. Mental time travel provides flexibility to reconstruct the past and imagine the future in order to increase future survival chances, using past experiences adaptively to imagine perspectives and events beyond those that emerge from our immediate environment. Thus, the purpose of mental time travel is to enhance our biological fitness in the future by helping us shift

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<sup>592</sup> Schacter and Addis, 2007, 773–786.

<sup>593</sup> Martin A. Conway, and Christopher W. Pleydell-Pearce, “The Construction of Autobiographical Memories in the Self-Memory System,” *Psychological Review*, vol 102, 2 (2000): 261-288.

from past to future to better cope with our surroundings.<sup>594</sup> Because information about past experiences is useful only to the extent that it allows us to anticipate what may occur in the future, mental time travel cannot be defined with reference to veracity of its content. In a word, past events are remembered, modified, and adjusted to the coming future, implying that memories used for prospection are neither wholly true nor false. Thus, episodic memory extends the individual's temporal perspective via prospection, taking place in the present but allowing for the imagining of the future for purposes that are imbedded in both the present and the future. Furthermore, consistent with the constructive episodic simulation hypothesis, neuroscientists have found direct links between processes underlying memory distortions and those underlying mental simulations of the future. Neuropsychological and neuroimaging studies also support the idea that memory errors reflect the healthy operation of constructive processes supporting the ability to remember what has actually happened in the past. Thus, this prospection system enables us to simulate the future but also creates memory errors and distortions that reflect the adaptive operation of a healthy memory system.

### **Deficit in episodic memory impair the ability to imagine**

The dependence of prospection on episodic memory can be identified by studying patients with damage to the hippocampus and related structures in the medial temporal lobe (MTL).<sup>595</sup> This insight has been supported by studies which examine patients with deficits in episodic memory,

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<sup>594</sup> Suddendorf and Busby, 2003, 391–396; Thomas Suddendorf and J. Busby, “Making Decisions with the Future in Mind: Developmental and Comparative Identification of Mental Time Travel,” *Learning and Motivation* 36(2), (2005):110–25; Thomas Suddendorf, “The Evolution of Foresight: What is Mental Time Travel, and is it Unique to Humans?” *Behavioral and Brain Sciences* (2007), 30, 299–35.

<sup>595</sup> Larry R. Squire, Craig E.L. Stark, and Robert E. Clark, “The Medial Temporal Lobe,” *Annual Review of Neuroscience*, Vol. 27 (2004): 279-306.

and have found that deficits in recall abilities impair the ability to imagine new experiences.<sup>596</sup> The amnesic patient H.M., for example, was also impaired at planning and making predictions about his own future. This was also the case of K. C., who suffered from total loss of episodic memory as a result of closed head injury that damaged a number of brain regions, including the medial temporal and frontal lobes. K. C. was unable to plan or envision his personal future for any time period—not for the next day, month, or year.<sup>597</sup> This state is not unique to H. M. and K.C but characterizes other amnesic people.<sup>598</sup> Amnesic patients who are unable to answer questions about past events have been found to be equally unable to say what might happen tomorrow. This suggests that imagining prospective future event depends on and shares common neural processes with episodic memory, since a deficit in episodic memory deprives one of the ability to use experiences of the past, and, as a result, deprives one of the ability to foresee, plan, and imagine future experiences. The two deficits mirror each other, being mutually complementary aspects of temporal integration.<sup>599</sup> One serves a temporally past reflective function, the other a prospective one. Thus, remembering the past and imagining the future are closely related functions of a single cognitive system, or at least, kindred functions that overlap significantly and share many of the same neural mechanisms.<sup>600</sup>

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<sup>596</sup> D. R. Addis, Wong A.T., Schacter D.L. “Remembering the Past and Imagining the Future: Common and Distinct Neural Substrates During Event Construction and Elaboration”, *Neuropsychologia*, 45, (2007):1363–1377; Demis Hassabis, et al., “Patients with Hippocampal Amnesia Cannot Imagine New Experiences”, (2007):1726–1731; Demis Hassabis and Eleanor A. Maguire, 2009, 1263-1271; S. B. Klein, Loftus J., and Kihlstrom J.F., “Memory and Temporal Experience: The Effects of Episodic Memory Loss on an Amnesic Patient's Ability to Remember the Past and Imagine the Future,” *Social Cogn.* 20, (200):353–379.

<sup>597</sup> R. S. Rosenbaum et al., “The case of K.C.: Contributions of a Memory-Impaired Person to Memory Theory,” *Neuropsychologia*, 43, (2005):989–1021.

<sup>598</sup> Buckner, R.L., and Daniel C. Carroll, 2006, 51.

<sup>599</sup> Demis Hassabis, et al., “Patients With Hippocampal Amnesia Cannot Imagine New Experiences,” *PNAS*, vol. 104 no. 5 (2007): 1726–1731.

<sup>600</sup> Alan Richardson, “Defaulting to Fiction: Neuroscience Rediscovered the Romantic Imagination,” *Poetic Today*, vol 32, issue 4, winter (2011), 669.

The constructive nature of episodic memory, while enabling simulation of the future, is probably also the mechanism underlying imagination's general constructive and generative ability. Neuroimaging studies support this hypothesis, and provide insights into the extensive overlap in the brain regions that support true and false memories. These studies show that false and true memories depend on the same neural processes and regions, and that brain activity is similar in both of them.<sup>601</sup> Thus, memory distortions stem from many of the same neural processes as true memory. Due to repeated misinformation, false memories may be equally likely to ignite the sensory apparatus of the brain as true memories and, as a result, once false memories are implanted, it is often hard to rid them from memory. These findings have led neuroscientists to the conclusion that memory imperfections reflect the operation of a constructive and even creative process. Although memory errors may seem dysfunctional, they actually reflect normal memory functioning. In a related line of research, Dalla Barba *et al.* have found that patients who confabulate about their personal pasts also confabulate about their personal futures.<sup>602</sup> These researchers suggest that episodic and autobiographical memories are biased, flawed and distorted in order to preserve a coherent sense of self.<sup>603</sup>

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<sup>601</sup> Schacter and Addis, 2007, 773–786; Scott D Slotnick & Daniel L Schacter, “A Sensory Signature That Distinguishes True From False Memories,” *Nature Neuroscience*, vol 7, no. 6, (2004):664-672 ; Schacter, *The Seven Sins of Memory*, 2001, 99.

<sup>602</sup> Dalla Barba *et al.*, “Confabulation: Remembering “Another” Past, Planning “Another” Future. *Neurocase*, 3, (1997): 425–436; Dalla Barba G, Nedjam Z, and Dubois B., “Confabulation, Executive Functions and Source Memory in Alzheimer’s Disease,” *Cognitive Neuropsychology*, 16: (1999): 385–398.

<sup>603</sup> Martin, A Conway, *Sensory-Perceptual Episodic Memory and its Context: Autobiographical Memory*, in *Episodic Memory: New Directions in Research*, ed. Alan Baddeley, John p. Aggleton & Martin A. Conway, (Oxford: Oxford University Press, 2002), 55.

## **Memory and imagination**

### **The boundary-crossing between memory and imagination**

As discussed above, imagination is engaged in multiple forms of representation. It is not restricted to the fictive, but can also represent what has actually happened or might happen. In this way, imagining can take on many forms of real or fictive mental content. Recalling, on the other hand, seems to be more limited to existing past occurrences and therefore implies realness and knowledge. Thus, when we talk of remembering something, we imply that what is remembered actually happened and is in that sense true.

However, despite this one distinction between memory and imagination, it is by no means clear how to distinguish between them. Indeed, I can imagine something that actually happened, and, alternatively, can claim to remember things that had not actually happened. Moreover, memory and imagination depend on each other, and mutually engage in many other cognitive processes. Imagination is involved in remembering the past and remembering the past involves and enables imagining and predicting the future, conceiving of other consciousnesses, and imagining counterfactual scenarios. In fact, memory and imagination are mutually involved in every cognitive act. Thus, the intuitive distinction between memory and imagination does not reflect the real function of each cognitive process and the dependence of both of them on each other. Both imagination and memory are cognitive capacities which alter, compound, dissociate, and reconstruct mental content and are mixed together in various types of representations, reflections, simulations, and introspections. Thus, imagining and remembering can partly or entirely coincide, since imagination can function as an equivalent to memory and, alternatively,



remembering relies on imagination to construct coherent memories. Both emerge by rearranging of past experiences and can be triggered by the same cues to generate the same images. We use, for example, imagination in order to recall past experiences, just as memories can trigger new imaginings. Thus, while it is relatively easy to distinguish perceived reality from imagined reality, it is quite difficult to distinguish imagined from remembered reality because imagination and remembering are interwoven in the same acts. Indeed, often, our feeling of knowing that accompanies memories is unsubstantiated. Much research has show that we mistakenly ascribe memories to the imagination and vice-versa.<sup>604</sup>

Intuitively, we can ascribe different features and functions to each mental state, but, as we have seen, in many cases, these features and functions are not easily distinguished, leading to several questions about the nature of memory and imagination. Are our mental events memories, judgments, or imaginations when we reflect on a past event, when memory deviates from the past (either consciously or unconsciously), or when we judge the past differently than we did when first experiencing that past? How do memory and imagination differ as two kinds of representation? Can we speak about faithful memories even though they are in perpetual state of modification? Are memory and imagination distinguished by their motivational components? What is the exact epistemological status of memory? How does the neurobiological model of memory impact the way in which we conceive of and relate to our past and even to external reality? In short, key questions remains about whether there is a necessary and sufficient

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<sup>604</sup> C.E.L. Stark , Okado, Y., and Loftus, E.F., “Imaging the reconstruction of true and false memories using sensory reactivation and the misinformation paradigms, 17, (2010): 485-488; A. K. Thomas and Hannula, D.E., & Loftus, E.F., “How Self-Relevant Imagination Affects Memory for Behavior,” *Applied Cognitive Psychology*, 21, (2007): 69-86.

criterion that would identify instances of memory as distinguished from imagination. In what follows, I describe philosophical and neuroscientific attempts to answer these questions.

### **Criteria to distinguish between imagination and memory**

From Aristotle to today, the similarity between imagination and memory has led most philosophers to try distinguishing between them in terms of the characteristics of these mental representations. The supposition was that when we remember or imagine we entertain an image. And since memory and imagination can both attend an identical image, these philosophers often argue that what distinguishes between them is the quality of the image (i.e. whether it is vivid, intense, etc).<sup>605</sup> However, there are several reservations to make about this kind of classification. First, imagination and memory do not necessarily employ images, and can be manifested propositionally. Thus, criteria such as vividness cannot distinguish these two mental states when in propositional forms. Furthermore, even if imagination and memory were only exercised in terms of images, the characteristics of images cannot provide us with sufficient criterion to distinguish the content of these two cognitive acts, since vividness and other characteristics of images can be shared by both and can be modified over time. Second, the characteristics of image cannot be a criterion to distinguish remembering from imagining since criteria such as vividness and intensity are established inductively. That is, if the current image is vivid, we would deduce that it is a memory-image, and, alternatively, if the image is not vivid, we would deduce that it is imagination-image. However, deduction does not reveal differences in their underlying cognitive processes, but assumes this difference ex post facto. Therefore, this classification cannot indicate whether any given image is imagination or memory. Third, other

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<sup>605</sup> Alan R., White, 1990, 164. See also the previous chapter in this dissertation.

criteria that do not deal with the quality or features of the image do not satisfy either. While Williams James defines memory as image that refers to the past - “It is the knowledge of an event or fact, of which meantime we have not been thinking, with the additional consciousness that we have thought or experienced it before,”<sup>606</sup> - he acknowledges the possibility that two representations can be the same. Thus, representations of memory, imagination, or desire can coincide. However, what constitutes a memory representation is, according to James, an additional consciousness. Memories require not only

“a general feeling of the past direction in time, but it must be also attended with a feeling of “warmth and intimacy.”<sup>607</sup>

James suggests that a feeling of belief accompanies memories but not imagined past events:

*“the object of memory is only an object imagined in the past (usually very completely imagined there) to which the emotion of belief adheres.”*<sup>608</sup>

Thus, the images of memory are accompanied by kind of awareness such as warmth and intimacy and belief.

Like James, Russell also does not distinguish between memory and imagination using their content or quality but by the individual’s relation toward the representation. For Russell, it is the

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<sup>606</sup> Williams, James, *Principles of Psychology*, vol 1(London: Constable,1950) p. 648. Italics are in original. Cited also in Brian Smith, *Memory*, 32.

<sup>607</sup> James, *The Principles of Psychology*, vol 1, 649.

<sup>608</sup> James, *The Principles of Psychology*, vol I, Chapter xvi.

individual's attitude that determines which type of representation it is, whether it belongs to imagination, memory, or another mental state. Russell again defines memories as images that are accompanied by feeling of familiarity and sense of "belief- feeling" that the representation indeed refers to an existing past experience.<sup>609</sup>

"Memory-images and imagination-images do not differ in their intrinsic qualities, so far as we can discover. They differ by the fact that the images that constitute memories, unlike those that constitute imagination, are accompanied by a feeling of belief which may be expressed in the words "this happened." The mere occurrence of images, without this feeling of belief, constitutes imagination; it is the element of belief that is the distinctive thing in memory."<sup>610</sup>

He later writes,

"So, in memory, the pastness lies, not in the content of what is believed, but in the nature of the belief-feeling. I might have just the same images and expect their realization; I might entertain them without any belief, as in reading a novel,"<sup>611</sup>

Russell does not overlook the possibility of being mistaken about the pastness represented in the image. He is aware that imaginary representations can have a misleading feeling of familiarity and be accompanied by a feeling belief. He also does not ignore the fact that determining whether a cognitive act is a memory is itself an act that occurs now and not in the past. That is, designating a memory as a memory cannot guarantee that the remembered past event did, indeed,

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<sup>609</sup> Russell, *The Analysis of Mind*, 186.

<sup>610</sup> Russell, *The Analysis of Mind*, 176.

<sup>611</sup> Russell, *The Analysis of Mind*, 176.

take place. Therefore, he maintains that representations ascribed with misleading belief in their veracity will be regarded as memories as well. He writes,

“In investigating memory-beliefs, there are certain points which must be borne in mind. In the first place, everything constituting a memory-belief is happening now, not in that past time to which the belief is said to refer. It is not logically necessary to the existence of a memory-belief that the event remembered should have occurred, or even that the past should have existed at all. There is no logical impossibility in the hypothesis that the world sprang into being five minutes ago, exactly as it then was, with a population that "remembered" a wholly unreal past. There is no logically necessary connection between events at different times; therefore nothing that is happening now or will happen in the future can disprove the hypothesis that the world began five minutes ago. Hence the occurrences which are CALLED knowledge of the past are logically independent of the past; they are wholly analyzable into present contents, which might, theoretically, be just what they are even if no past had existed.

I am not suggesting that the non-existence of the past should be entertained as a serious hypothesis. Like all sceptical hypotheses, it is logically tenable, but uninteresting. All that I am doing is to use its logical tenability as a help in the analysis of what occurs when we remember.

In the second place, images without beliefs are insufficient to constitute memory; and habits are still more insufficient. The behaviourist, who attempts to make

psychology a record of behaviour, has to trust his memory in making the record. "Habit" is a concept involving the occurrence of similar events at different times; if the behaviourist feels confident that there is such a phenomenon as habit, that can only be because he trusts his memory, when it assures him that there have been other times. And the same applies to images. If we are to know as it is supposed we do--that images are "copies," accurate or inaccurate, of past events, something more than the mere occurrence of images must go to constitute this knowledge. For their mere occurrence, by itself, would not suggest any connection with anything that had happened before."<sup>612</sup>

Russell does not argue that correlation between a memory and a previously existing past is a necessary criterion for an image to be a memory image. Rather, he suggests that mental representations attributed with a "feeling of pastness" and "feeling of belief" are considered memories. In addition, Russell invokes context as a criteria to distinguish memory from imagination. By context, he means placing the remembering event in time order, and in temporal relation with other events.<sup>613</sup> Remembering the context in which an event occurs provides the memory of that event with links to other events or occurrences, thus providing continuity between successive events. The context of a memory and its relation to other memories help us to organize this memory.

Brian Smith expands upon Russell's context criterion. Smith maintains that, while an imagination does not develop a contextual setting, memory is characterized by associating

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<sup>612</sup> Russell, *The Analysis of Mind*, Lecture IX.

<sup>613</sup> Russell, *The Analysis of Mind*, 1921, 162.

memory images with other images that include contextual and background information.<sup>614</sup>

However, even though memories possess contextual frameworks, Smith argues that the difference between imagination and memory is “one of degree rather than one of a kind.”<sup>615</sup> For Bartlett, the distinction between remembering and imagining is that

“in remembering a man constructs on the basis of one ‘schema’, whereas in what is commonly called imagining he more or less freely builds together events, incidents and experiences that have gone to the making of several different ‘schemata’ which for the purpose of automatic reaction, are not normally in connexion with one another.”<sup>616</sup>

However, as Bartlett continues,

“even this difference is largely only a general one, for as has been shown again and again, condensation, elaboration and invention are common features of ordinary remembering, and these all very often involve the mingling of materials belonging originally to different ‘schemata.’”<sup>617</sup>

In a related vein, according to Vendler, the difference between imagining and remembering is that, while remembering is confined to one’s own past or to facts that have been learned in the past, imaging extends to all possible experiences.<sup>618</sup>

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<sup>614</sup> Smith, *Memory*, 1966, 142-143.

<sup>615</sup> Smith, *Memory*, 1966, 143.

<sup>616</sup> F. C. Bartlett, *Remembering: A Study in Experimental and Social Psychology*, (Cambridge: Cambridge University press, 1932), 205.

<sup>617</sup> Bartlett, *Remembering*, 205.

<sup>618</sup> Zeno Vendler, *The Matter of minds*, (Oxford: Clarendon Press, 1984), 64.

Kendall L. Walton maintains that many features of imagining and recalling are the same. For example, recalling and imagining can be both deliberate and spontaneous, and we can be active and passive in both cognitive states. Yet, according to Walton, deliberate and spontaneous memories are distinguished from deliberate and spontaneous imagination. While we ascribe credibility to both deliberate and spontaneous memories, we ascribe credibility only to spontaneous imaginations. This difference is because for deliberate imagination, we are often aware that we have constructed it, whereas spontaneous imaginings, according to Walton, “tend to be more vivid than deliberate ones”<sup>619</sup> and “have a life of their own.”<sup>620</sup> They are

“likely to be more ‘vivid’ or ‘realistic’ experience. One which, in its independence of the will, is more like actually perceiving or otherwise interacting with the real world.”<sup>621</sup>

In this way, Walton claims that spontaneous imaginings tend to be more vivid and realistic than deliberate ones. He maintains that it is harder to vividly imagine things when one knows that they are fiction than when one spontaneously imagines and is unaware of the dependence of his imaginings on him. The spontaneous, involuntary, or unintentional imaginings feel less dependent on the person who imagines them and seem to resemble the real experience.<sup>622</sup> When, for example, an imagination spontaneously evokes a strong sense of fear, this emotion strengthens the vividness of imagination so much that it is difficult to distinguish between imagination and a real occurrence. The example given earlier by Gaut (about misperceiving the coat rack for intruder) shows how fear can generate vivid imaginations which are

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<sup>619</sup> Walton, *Mimesis as Make-Belief*, 15.

<sup>620</sup> Walton, *Mimesis as Make-Belief*, 14.

<sup>621</sup> Walton, *Mimesis as Make-Belief*: 14.

<sup>622</sup> Walton, *Mimesis as Make-Belief*: 14- 15.



undistinguished, at least for an instant, from real occurrences. Dreams and illusions are extreme examples of this process. For these phenomena, imagining and perceiving come together so that confusion may emerge about whether a mental event is one or the other. Furthermore, if a certain imagining that is associated with fear is repeated, this imagination will eventually become incorporated into memory. Thus, spontaneous imagining is also a case that might be difficult to distinguish from recalling. Imagination and memory cannot be distinguished from each other by the feature of being either voluntary or compulsively, since both capacities have these states. Walton maintains that another difference between recalling and imagining is that in imagining, one imagines oneself while bracketing off his whole self. In imagining, one considers and visualizes one specific aspect of the self, while excluding parts of the self not relevant to the imagining. This exclusion occurs in order to enable us to imagine something which is disconnected from the real world and the totality of the individual's preferences and needs. In memory, this exclusion does not happen, since in it, the rememberer does not subtract or add information about himself, memories encompassing the whole self in the remembered experience. Upon closer examination, however, it is clear that this kind of bracketing also takes place in remembering, since one can repress, forget, change, and distort past events according to emotional needs. However, memory and imagination do seem to differ in relation to shame. While when we imagine something that trespasses our concepts of morality, we tend to feel shameful about vocalizing this imagination and having others know about it. However, in remembering immoral experiences, we might feel shame, but it will be joined with feeling of guilt, since the actions did not only occur in the realm of thinking but also in external reality. Even so, this difference does not provide us criterion to distinguish memory from imagination

since it is deduced from the present feeling and does not guarantee that we are not confusing memory for imagination.

Casey suggests five criteria to distinguish imagination from memory. Some of these criteria echo those posited by Husserl, James, and Russell, criteria such as (1) rootedness in perception, (2) link to the past, (3) retentionality, and (4) familiarity and (5) belief. By rootedness in perception, Casey means that remembering relies on previous perceptual experiences. In contrast, imagination does not, according to Casey, encompass imaginings of real past events. By link to the past, Casey refers to the temporal character of memory, how memory remains persistent over time and how memories generate continuity between past occurrences. Casey writes,

“The temporal field that in which remembered content is presently given to one is ultimately continuous with the particular temporal field within which this content was first experienced at an earlier and precisely datable point. For both the original field of experience and the present field of recollections (which may resemble each other only insofar as it is the same object or event that is experienced and remembered ) form part of a single temporal continuum. No matter how distant in time the two fields may be from each other, we are assured that intermediate fields serve to connect the original field with the one in which our remembering now occurs. The resulting continuum from past occurrence to present remembrance provides a unified foundation for the persistence of remembered material.”<sup>623</sup>

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<sup>623</sup> Edward S. Casey, “Imagination, Fantasy, Hallucination and Memory,” in *Imagination and its Pathologies*, Ed. James Phillips & James Morley, (Cambridge: The MIT Press, 2003), 68.

According to Casey, memory borrows its content from perception and has temporal character. It exhibits persistence and continuity with the experience on which it is based. Imagination, on the other hand is not attached to any original experience. It does not persist over times and is not confined to past or real.<sup>624</sup> Its content lacks stability, persistence, and temporal continuity. Although Casey argues that the relationship of memory and imagination to the past distinguish memory from imagination, both memory and imagination are of the present. Thus, any systematic theory of memory must show how memories show connection and continuity to original previous experiences—a task Casey leaves unconsidered. Moreover, the connection and continuity criteria must be inductive, since if we feel that there is continuity and persistence, we deduce that mental act is a memory, even if there is no proof that this act indeed correlates with the actual past. Casey's third criterion, retentionality, is divided to two components—retentiveness and retentional fringe. Retentiveness is the capacity to retain and recall experience. Retentional fringe is the moment immediately preceding a memory that still clings to the perception of the present.<sup>625</sup> That is, by retentionality, Casey means the ability or the capacity to retain a past experience in the mind. It is the basis for recollection and it does not have to be explicit.<sup>626</sup> However, it also includes retention in the Husserl's sense of the immediate past, the just past experience whose affect still lingers in the present. According to Casey, this retentionality generates feelings of continuity and does not exist in the imagination. Familiarity, the forth feature of memory, means that remembering is accompanied with a feeling of acquaintancy that gives us a sense that the experience did occur in our past. This criterion is similar to James' "warmth and intimacy" criterion or to Russell's feeling of familiarity, and it

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<sup>624</sup>Casey, "Imagination, Fantasy, Hallucination and Memory," 65.

<sup>625</sup> See also the chapter on Husserl.

<sup>626</sup> It might be similar to priming.

indicates a “personal relationship with the content of past experience.”<sup>627</sup> In the last criterion, belief, Casey refers to the fact that remembering is accompanied by belief that the memory relies on previous experiences. We do not assign such beliefs to imaginings, whose existence we generally take to be wholly mental. Here, Casey disregards the ability of some imaginings to become integrated into memories, leading us to consider and believe in their past actuality. He also disregards the fact that imagination can be accompanied by a feeling of familiarity and misleads us to refer to imaginings as memories. While Casey does not deny that memory and imagining possess several common features, he resists submitting that imagination and memory are different only in degree.

Gaut, as already mentioned, does not specify how remembering and imagining differ, but, rather, identifies the difference between imagining and believing, arguing that the difference between the two stems from how we are committed to their truth or falsity, existence or non-existence. For example, I cannot believe something without being committed to its truth or existence. While when I remember, I am committed to the truth of what I remember, I can imagine something without such commitment to the truth, falsity, existence, or non-existence of the imagined:

“Imagining that *p*, is a matter of entertaining the proposition that *p*. Entertaining a proposition is a matter of having it in mind, where having it in mind is a matter of thinking of it in such a way that one is not committed to the proposition’s truth, or indeed to its falsity. In contrast, the propositional attitude of believing that *p* involves thinking of the proposition that *p* in such a way as to be committed to the proposition’s truth. One can put this point in slightly different but equivalent ways.

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<sup>627</sup> Casey, “Imagination, Fantasy, Hallucination and Memory,” 70.

Instead of talking of entertaining the proposition that p, one can talk of thinking of the state of affairs that p, without commitment to that state of affair's (actual) existence. Or some make the point in terms of unasserted thought: to entertain the proposition that p is to think of p, but without 'asserting' that p. Since assertion is strictly speaking a speech-act, not a propositional attitude, 'assertion' should be understood in terms of commitment to the truth or falsity of a proposition (alethic commitment) in the way just outlined. These equivalent ways of presenting the view all have an important corollary: it is possible both to believe that p and to imagine that p, since one can consistently have the two distinct propositional attitudes towards the same proposition."<sup>628</sup>

Yet it seems that there are a few reservations to make regarding Gaut's statements about imagination and belief. As already discussed, we cannot consider the state of imagination to be beyond commitment to existence or truth. Imaginings are almost always associated with the belief that they are truth or false. In other imaginings, we might have doubt regarding to their truth value and existence—however, this doubt does not derive from lack of commitment, but, rather, lack of knowledge. Furthermore, some of our memories are falsely committed to the truth even while they do not accurately represent the truth. Thus, Gaut's criteria do not enable us to distinguish cases of believing and imagining something when we are committed to its truth or existence.

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<sup>628</sup> Gaut, "Creativity and imagination," 148–73.

## **Neuroscience challenges the distinctions between memory and imagination**

Attempts to distinguish between imagination and memory often disregard the complexity of these two mechanisms. They also do not take into account the complex and interrelated processes and functions of memory and imagination. As Gregory Currie and Ian Ravenscroft wrote, in a different context, we can have several factive attitudes towards our mental content.<sup>629</sup> Memory is not necessarily the only mental process to contain a factive attitude, for imaginings can contain a factive attitude just as memories can be false. Attempts to distinguish between remembering and imagining by referring to various criteria—their resemblance or lack of resemblance to actuality, commitment or lack of commitment to truth, intention, belief, circumstances, context, familiarity, vividness, link to the past, etc.—provide us with several necessary criteria for distinguishing memory from imagination which, however, are not sufficient to distinguish between them. Thus, even though these criteria are pertinent, they are not absolute, but a matter of degree. Indeed, memory is generally associated with true belief, commitment to existence, and truth, while imagination is generally characterized by the opposite. Furthermore, often, we may strongly believe in the accuracy of a memory, but can be wrong in this belief. One can claim that when a mental event is ambiguous, memory and imaginations can be distinguished by supporting evidence. However, such evidence does not always exist to clarify this ambiguity. Moreover, when external evidence is available, this evidence does not necessarily provide us with the ability to distinguish between memory and imagination, since external evidence is often, according to theories of memory construction, integrated into memories. In the following I will dwell on three central criteria that are used to distinguish

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<sup>629</sup> Currie and Ravenscroft, *Recreative Minds: Imagination in Philosophy and Psychology*, 7.

between memory and imagination, and will examine these criteria more thoroughly. These criteria are belief, familiarity and finally intentionality.

## **Belief**

Belief is a prominent criterion used to distinguish memory from imagination. From Hume onwards, thinkers highlighted belief to define memory, ground its authority, and clarify its epistemological status. Remembering and imagining, it was claimed, manifest belief differently. Remembering is accompanied by the belief that the remembered content represents a true previous past occurrence, whereas imagination is either not accompanied by such belief, or, alternatively, is accompanied by the belief that the imagined content is definitively not based on real occurrence. However, this distinction simplifies the complexity of the functions of these cognitive acts. Neuroscientific theories of memory formation challenge the privileged relationship between memory and truth, showing that memories do indeed rely on belief, but not necessarily on truth. Memory does not necessarily serve the past, but, rather, serves the needs of the present and expectations about the future. Beliefs attached to memories can be far from truth, while imaginings can consciously or unconsciously be compatible with truth and belief. Thus, both can, in a sense, be imaginary, just as both can have actuality, and their content can coincide, be integrated, and sometimes even be the same. However, the distinction between memory and imagination is not simple since both have a range of states, each of which involves different functional characteristics and entails different levels of belief. For instance, the degree of belief

can determine the level of certainty in its reality.<sup>630</sup> Furthermore, not only does each cognitive act engage various levels of belief, but studies in cognitive psychology have shown that belief and high confidence in a content of a mental representation do not necessarily correlate the real epistemological status of this representation. There are many cases in which we mistakenly attribute a representation to memory when it is in fact an imagination, or, alternatively, attribute a representation to imagination when the source is memory. Therefore, illustrating the various forms of belief that are involved in imagination and in memory will help us understand whether we can use them as distinguishing criteria.

### **Imagination and belief**

The relationship between belief and imagination varies according to the type of imagination involved, of which there are roughly four forms: (1) pure imagination; (2) imagination involved in forms of projection such as prospection, expectation, supposition, etc; (3) hallucination and illusions; and (4) imaginations that engender false beliefs, misperceptions, or misremembering.

(1) Pure imagination is not constrained to rationality or to an exact representation of reality. In pure imagination, beliefs enter an “offline” state to enable formation of an enclosed belief that serves the imagination. In pure imagination, our usual and everyday beliefs are suspended to enable the free creation and generation of representations. In this state, we are aware that we abandon beliefs and withdraw into an internal imaginative which does not reflect real occurrence past, present, or future. Thus, we are fully aware that these imaginings are our own purely fantastic creation. This, for example, occurs in sexual fantasy, or when we fantasy our desired

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<sup>630</sup> Theodore R. Sarbin, *Believed in Imaginings: A Narrative Approach*, in *Believed in Imaginings: The Narrative Construction of Reality*, Ed. Joseph de Rivera & Theodore R. Sarbine, (Washington D.C.: American Psychological Association, 1998), 22.



future. Pure imagination is also expressed in creative works such as novels or works of art. In sum, pure imagination appears when we withdraw from our beliefs in the process of generating new representations.

(2) A second form of belief is when imagination involves various cognitive acts such as simulating, supposing, planning, expecting, counterfactual imagining, wishful thinking, forming goals, planning, etc. This form of imagination represents what is plausible, rational, and especially connected to previous occurrences. Thus, for this form of imagination, the individual commits to and believes in the truth or plausibility of the imagined. However, this commitment is usually accompanied by some degree of uncertainty –in contrast to false memories, which occur when one falsely believes that a mental representation captures a past experience and when one is therefore committed to the truth of this representation.

(3) The third and extreme type of belief involved in imagination is manifested in hallucinations and illusions. In this kind of imagination, the individual attributes to an imagination belief in its actuality and realness. According to Theodore R. Sarbin, such imaginings are accompanied with feeling of realness and high degree of involvement. By high degree of involvement, Sarbin means that these imaginings have a high conviction, such as is the case in believing in God and in “ecstasy, mystical experience, religious conversion and sexual union.”<sup>631</sup> When this belief is strong, the imagining is interpreted as equivalent to veridical perceptions (as is the case when people believe God talks to them). Interaction between imagining and belief occurs when one mental state is replaced with another one, when “a mental state of one kind (an imagination)

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<sup>631</sup> Sarbin, *Believed in Imaginings*, 25.

presents itself to the subject as a mental state of another kind (belief).”<sup>632</sup> However, while Sarbin and Currie separately describe the interaction between belief and imagination as the result of mental disorders, or as a result of experience of transformation, high involvement of belief and confidence in imaginations also take place in more mundane, daily experiences (as we saw when considering the phenomena of imagination inflation and the constructive memory framework). Confusing imagination for memory can be a trivial state occurring for a healthy person, and does not necessarily have to entail a state of schizophrenia or hallucination. These daily false beliefs, in turn, leads us to the forth form of interaction between imagination and belief.

(4) The fourth type of imagination-belief interaction is habitual and unconscious. We integrate imaginative components into autobiographical memories in a way that makes it impossible to distinguish the imagined components from the genuine memories. Such integration underlies small, mundane changes and also more crucial modifications of memories. This integration can take the form of false interpretation, misattribution of details not part of the original experience, and whole invented representations of events that did not happen. Thus, the role of imagination in episodic and autobiographical memories varies from the integration of minor imaginative components into memories to the generation of whole imaginative representations assigned with credibility and true belief.

This integration also happens, for example, when we reconstruct autobiographical memories. Imaginations merge with our memories when we reconstruct and fill out missing information inferentially,<sup>633</sup> even as we are unaware that the additional information is supplemented by our imagination. This interaction between imagination and belief is distinguished from hallucinations

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<sup>632</sup> Currie, *Imagination, Delusion, and Hallucinations*, in *Pathologies of Belief*, 175.

<sup>633</sup> Currie and Ravenscroft, *Recreative Minds: Imagination in Philosophy and Psychology*, 13.

and illusions mainly because it integrates imaginations into our autobiographical memory in a rational and realistic way. It completes lacking details and helps us construct a coherent story about ourselves. While illusions and hallucinations stem from neurological disorders and clearly depart from the reality, false beliefs are mundane and a natural byproduct of the integration of memory and other cognitive processes. Indeed, in our everyday life, imagined representations are infused in our memories and are assigned credibility. In these cases, imaginings are transformed into memory representations via belief and confidence in its credibility. And, as neuroscience shows, there are many mundane cases when the attitude of imagination confuses us and relates inappropriate belief to representations. Thus, belief can be so strong that it results in the conviction that the content of the imagination had actual past reality. These insights are further reinforced by imagination-inflation studies. These studies have shown that imagining an event increases belief that it happened and creates false memory about the event.<sup>634</sup> One of two explanations that neuroscientists provide for imagination-inflations is familiarity. Intensive and repetitive imagination generates feeling of familiarity regarding the imagined thing. We imagine something many times until it became very familiar and then we assign a belief that it really took place. Thus, familiarity misleads us as we see imaginations as memories of actual occurrences. Familiarity is, incidentally, the same criterion used by James, Russell, and Casey to distinguish memories from imagination. However, neuroscientists and these imagination-inflation studies have undermined the use of such criteria to distinguish memory from imagination. The question is thus whether imagination and memory can be distinguished at all, since neuroscience shows that our belief in the validity of memory is often unwarranted. Questions remain about whether

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<sup>634</sup> Giuliana Mazzoni & Amina Memon, "Imagination can Create False Autobiographical Memories," *Psychological Science*, vol 14 no. 2 (March, 2003): 186-188; Goff, L. M., & Roediger, H. L., "Imagination Inflation for Action Events: Repeated Imaginings Lead to Illusory Recollections," *Memory & Cognition*, 26, (1998): 20-33.

these cognitive capacities can be distinguished if our beliefs mislead us about their epistemological status and if beliefs are attached to memories which go through unconscious process of reconstruction. Can we distinguish between true memory belief and false memory belief, between memory and imagination, even when these two mental states are both accompanied by belief?<sup>635</sup>

### **Memory and belief**

Memories also vary in degree of beliefs attached to them. For example, some beliefs are very low-grade beliefs, while others are taken for granted, even when there is no evidence to support this confidence. In contrast to semantic memory that we share with others, we are the only authority to provide statements on autobiographical memory. However, we are often not in the position to defend our beliefs, since we cannot go back to the past and justify or verify our current beliefs. Even when we do have supporting evidence, it does not necessarily validate the belief, even if it correlates to what seems to be the past. As was also mentioned above, even if supporting evidence might support the current belief, it is very plausible that this supporting evidence itself has already been integrated into the memory, influencing and constructing a new belief but does not necessarily represent the real past occurrence.<sup>636</sup> Thus, unconsciously, we integrate apparent supporting evidences from the present into a memory that changes due to natural alterations in perspective and interpretations. Generally, relying on present perception-justification might verify the modified memory, but not necessarily the original experience.<sup>637</sup>

Neuroscience, then, leads us to the view that memories, like imaginings, are misattributed true

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<sup>635</sup> On false memories and false beliefs see for example Tom Smeets, Sebastiam Telgen, Jame Ost, Marko Jelicic and Harald Merckelbach, "What's Behind Crashing Memories? Plausibility, Belief and Memory in Reports of Having seen Non- Existent images," *Applied Cognitive Psychology*, 23: (2009): 1333-1341.

<sup>636</sup>H. h. Price J. Laird and J. N. "Wright, Symposium: Memory-Knowledge," *Aristotelian Society, Supplementary Volumes*, Vol. 15, *What can Philosophy Determine?* (1936): 16.

<sup>637</sup> See the example of the sand castle given by Brian Smith.

belief. In this way, neuroscience eliminates the opposition between true memory beliefs and false memory belief, since all autobiographical memories entail, in sense, false beliefs. Recalling is in some degree always falsely believed, for this the recall never is exactly like the original experience and goes through various modifications without our awareness so that we falsely believe that memory represents events exactly the way we experienced them. There is also always the option that what we remember stems, in fact, from imagination, and also the opposite possibility that what we imagine is actually based on memory. Since imagination entails false belief and remembering integrates imaginative components then we are faced with the problem of how to distinguish them. The implications of this question are different when recalling is opposed to fictive imagining and when it is opposed to imagining in a sense of falsely believed. The difference between these two types of imagining is, of course, between believing and not believing in the content of the mental representations. In pure fantasies, we have awareness that the representations are fictive, while in false belief, we have exactly the same belief or awareness as for true memory belief. The ontological status of true and false belief might be different, but their epistemological status is the same. Again, I am not referring to states of pure fantasy when our beliefs are in an “offline” state, but, rather, am claiming that distinction between true memory beliefs and false memory beliefs is, at best, weak and, at worse, misleading, since every memory belief is itself a combination of imagination and remembering. Imagination is always an ingredient in the process of remembering, and we cannot oppose imagination and remember by referring to belief. Memories are in a perpetual change; they are prone to influences, distortions, and deceiving; they are never the same and never result in fully accurate representations. However, we still attribute to memories belief and view them as accurate representations of our past.

The interaction between imagination and memory does not only occur when we activate a memory and integrate new information at the time of recalling, but is already operative at the time of encoding. Urmson, for example, provides an example of when individual interpretations and judgments at the time of encoding are involved in the formation of belief. In these contexts, it is difficult to know whether the mental event is to be attributed to remembering or imagining:

“Thus 'I imagined myself to be disliked by everyone present' might mean that I made up for myself a little fairy tale in which I was the black sheep of the party, or it might mean that I wrongly believed that everybody present disliked me.”<sup>638</sup>

In case that the judgment of himself as the black sheep of the party is a false judgment, this is a combination of memory and imagination. It is partial imagination since the ontological state was different and it was not true. The interpretation or the judgment of the situation modifies the real towards an imagined one. On the one hand, this experience does derive from memory, since the speaker recalls an experience that he really had irrespective of whether his interpretation was wrong or right. The epistemological status was different if the speaker was aware of the fictive quality of his interpretation: if he believes that this happened and his mental representation was a genuine recollection (even though that the event did not happen), this forms a false memory belief.

Recollections of autobiographical memories contain unconscious false beliefs that are infused in different phases. Yet we still consider these memories to be true, even if the reconstructive process of memory means that they are fused and integrated with varieties of information in different phases such as during the acquiring, storing, and retrieving of a memory. The question

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<sup>638</sup> Urmson, *Memory and Imagination*, 85.

is whether we can oppose true recollection to imaginings we falsely believe, since the epistemological status of both is the same; we are not aware of the involvement of imagination in the process of (1) understanding the experience and (2) remembering it. False recollection must be opposed to recollection given that the events represented in false recollections did not happen, but since I am not aware of this fact, I recognize the representations as recollections. In that case, a memory is composed of imagination with awareness or belief of it being a memory.

Imagination acts as a remembering- like imagining.<sup>639</sup> Thus, the integration between imagination and memory actually causes unjustified belief to become justified belief. Alternatively, since memory is a dynamic process, it implies that there it is no justified memory belief. Thus, the neuroscience of memory formation leads to skeptical conclusions about memory by undermining the justification of true memory belief. In turn, to further examine these distinctions, in the following, I discuss the various theories of memory belief and justification.

### **Belief and justification**

Believing is not necessarily congruent with knowing, since one can believe without knowing whether a state of affair is true. One can also follow Russell's hypothesis that the world came into a being five minutes ago and maintain that a memory belief is independent of the past occurrence. According to Russell, in order to account knowledge of the past, memories are accompanied with a feeling of familiarity and belief. Consequently, we would count both false and true memory beliefs as memories so long as they were accompanied with such feelings. In short, according to Russell, memory beliefs do not necessarily entail relying on past experiences.

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<sup>639</sup> I am following Gregory Currie and Ian Ravenscroft's terminology. Currie and Ravenscroft, *Recreative Minds: Imagination in Philosophy and Psychology*, 12.

Therefore, according to Russell, an imagination–image accompanied by a feeling of familiarity and belief will be regarded as a memory.

Likewise, according to the foundationalist theory of memory belief justification, the reason for believing in a memory as a memory is determined by the justification I had when I originally formed the belief in the past,<sup>640</sup> the justification depending on the initial circumstances.

Therefore, according to this theory, an apparent memory belief is justified (even if it is not actual). Another version of the foundationalist theory—the preservation theory—claims that memories are attributed the generative capacity of justification that, unlike perception, also functions as a preservation source for justifications.<sup>641</sup> Put differently, memory does not generate new justifications for a belief, but merely preserves whatever justification we previously had for it. Thus, the justification for a memory belief is determined at the initial formation of a memory and, from then on, is preserved. That is, a memory belief is not changed during an interval from  $t1$  to  $t2$ , since the belief associated with a memory is sustained from the initial formation to the later recall. There are several reservations to make regarding both the foundationalist theory and the preservation theory. The foundationalist theory, like Russell’s approach, implies that an initial false and unjustified belief will be counted as a justified belief, since an apparent memory is justified as a memory belief regardless of whether this belief is actually justified. Michael Heuer puts forward a dualistic theory that accommodates to and improves upon the foundational and the preservation theories. The dualistic theory, he claims, avoids the implications of unjustified belief (as in Russell’s hypothesis that the world sprang into being five minutes

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<sup>640</sup>Robert Schroer, “Memory Foundationalism and the Problem of Unforgotten Carelessness,” *Pacific Philosophical Quarterly*, 89 (2008): 74–85.

<sup>641</sup>Robert Audi, “Memorial Justification” *Philosophical Topics*, 23 (1995): 251-272; Robert Audi, *Epistemology: A Contemporary Introduction to the Theory of Knowledge*, (London: Routledge, 1998), 68-69; Schroer, Robert, “Memory Foundationalism and the Problem of Unforgotten Carelessness,” 74-85.



earlier). Heuer maintains that every belief encompasses two degrees of justification—justification that involves the initial formation or adoption of the belief and a justification that is involved in retention.<sup>642</sup> He maintains that the dualistic theory succeeds in maintaining both justifications: the justification in the circumstances of the initial acquisition and at the time of recalling. However, neuroscience casts doubt on both memory as a belief-generating process and process of belief preservation, for it shows how the process of memory and belief formation are both dynamic. For example, the theory of episodic memory challenges the preservation theory, since episodic memory and attached beliefs are modified over time.

As neuroscience shows, we might believe one thing at  $t1$  and different thing at  $t2$ , as the passage of the time unconsciously transforms a memory and, as a result, beliefs. Beliefs retained from an earlier experience do not necessarily go through the same adaption process as memories and, if they do, we are not aware of this process. Thus, findings in neuroscience challenge foundationalist theories since, even if a belief is justified in the past, this initial belief does not guarantee that the current belief is justified since the memory itself went through a series of unconscious modifications. In addition, if the belief is itself adjusted to correspond with memory's current content, then this belief no longer represents the original memory, but rather the new modified memory. It follows, then, that this new belief no longer corresponds with the original memory belief, but with the modified memory, since this belief is itself involved in the same reconstructive process as memory. At the time of recalling, we have a modified justification connected to the current modified memory.

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<sup>642</sup> Michael Huemer, "The Problem of Memory Knowledge," *Pacific Philosophical Quarterly* 80, (1999), 353.

Another attempt to justify memory belief is inferential. According to this account, if my expectations are fulfilled, this gives evidence the fact that the related memory is justified. The fulfillment of expectations, according to Michael Huemer, confirms that the knowledge was based on memory and that my memories are highly reliable.<sup>643</sup> However, inferring from the fulfillment of expectations disregards the natural process of incorporating expectations into episodic memories at the time of recalling. Episodic memory is formed, modified, and adjusted according to current circumstances, expectations, and anticipations. At the time of recalling, episodic memories internalize expectations and anticipations regarding the future and these memories are changed according to these factors. Thus, since memories internalize expectations and anticipations, we generally feel that our expectations are fulfilled even if they are not. Fulfillment might come about as a result of the modification process itself in order to adjust the past to the present and to what we expect will be the future. Because we are not aware of the revision process, we falsely perceive our current state to be exactly our past state of mind. Therefore, we also falsely assume that our expectations are fulfilled instead of perceiving that past is adjusted to our current expectations. The inferential argument thus ignores the revision that takes place unconsciously and leads us to problematically connect the current memory to the past instead of connecting it to more relevant states such as the present and future. Fulfilled expectation does not necessarily prove that the knowledge relies on memory, since these expectations may rely on imaginary functions such as supposition, or on new integrated information. Moreover, there are cases when our expectations are not fulfilled, however, this does not necessarily imply that our memories were not reliable.

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<sup>643</sup> Huemer, "The Problem of Memory Knowledge," 346-347.

Another attempt to justify memory belief is through coherentism. According to coherentism, one memory belief is justified by other apparent memory beliefs. If a memory belief is consistent with the general system belief, and if the various details of the individual memory cohere with the general sense of belief, then this memory is justified. However, this theory also does not take into account the dynamic formation of episodic memories. Memories change perpetually, incorporating other details and accommodating to other changes. The reconstructive process might cause a true memory belief to be modified and becoming to a false memory belief in order to cohere with other inaccurate memory beliefs. In sum, philosophers often speak about original memory belief, belief maintenance, and about lack of conflict in the belief system. However, they overlook the dynamic character of memory, how it undergoes changes every time retrieval occurs. Therefore, the way memory is structured leads to an unjustified memory belief. Neuroscience not only undermines the epistemological status of memories themselves but also of beliefs that constitute the subjective conviction about the truth of memories.

### **Belief reflecting the present rather than the past**

To understand the misleading quality of memories, we also need to understand the processes and functions of beliefs and the relation between memory and belief. A central question is whether a belief follows the unconscious process of construction or whether belief is separate from construction. In the latter case, belief and memory would be linked only at the time of recalling, when a memory attains conscious form. However, if the fusion of memory and belief takes place at the time of recall, this suggests that these two cognitive processes are separate, having distinct epistemological realms, and that belief does not reflect the real status of autobiographical memories. However, if belief is a part of the constructive process of memory and is also modified like memory, the question becomes whether belief reflects the process of modification

or whether it eliminates traces from previous phases. If a memory belief reflects the various modifications a memory goes through, then this modification process might cause multiple and possible contradicting representations. However, if a belief eliminates previous phases of belief, it does not matter whether a belief follows the process of change or if it appears only at the last stage after the memory is already formed. The ordinal character is not important, since whether the belief is joined at the last conscious phase or whether the belief exists all the time but eliminates the previous phases, both represent only the current state. Our belief reflects the present memory with all associated information added during reconstruction, possibly creating a discrepancy between a belief and a past. The conclusion of this finding is that belief does not have bearing on our real past, but on the current memory representation. That is, memory representation mislead us when they are accompanied by the belief that the knowledge that we maintain on our own past is as it happened, when in fact this knowledge is a mix of components only one of which is the past event as experienced. This raises the question whether this confusion is due to the fact that we do not know that memory does not represent the past or whether another factor is responsible.

### **Neuroscientific explanation of the unified self**

Not only we are misled to believe that our memories represent the past as it is, but we feel that our memories are coherent and consistent. Memories represent experiences but do not show the underlying processes of changes that these memories go through. Indeed, rationalization and confabulation are, at the very least, engaged in the normal functioning of episodic memory and, overall, are an inherent part of our memory as a whole. Yet despite these facts, we feel that our memories are unified and reliable. What are possible neuroscientific explanations for this confusion? Why do we have the feeling that our memories are unified and coherent and that our

self is unified? Is the feeling of unity an illusion? What might be the reason for this unified experience?

Neuroscientists such as Michael S. Gazzaniga believe that the brain's left hemisphere is responsible for this unified experience.<sup>644</sup> He suggests that the “interpreter” function, attributed to the left hemisphere, is the answer for why we perceive ourselves and our past as unified. According to Gazzaniga, the right hemisphere remembers and represents the reality literally, while the left hemisphere tends to falsely recognize and confabulate, not having the capacity to discern gaps of time and space if they occur. The left hemisphere thus confabulates since it tries to form coherency by interpreting seemingly contradictory memories or information. As an interpreter, it is responsible to form a narrative and coherent interpretation for the varied and incongruent information. It forms coherent narratives by ignoring certain information and is responsible for our belief about our memories.

Split brain studies give evidence for these differences in hemisphere functions. In patients with split brain (when left and right cerebral hemispheres are separated), these two hemispheres have different responsibilities for different actions and behave separately, without awareness of how the other hemisphere reacts to information. While the right hemisphere provides literal descriptions about external reality, the left hemisphere provides interpretations, explanations, and rationalization to make sense of actions made by the right hemisphere.<sup>645</sup> However, when the left hemisphere does not receive information from the right hemisphere, its reaction to reality is confabulated. Without receiving information from the right hemisphere, the left hemisphere

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<sup>644</sup> Michael S. Gazzaniga, *Who's In Charge? Free Will and the Science of the Brain*, (New York: Harper Collins publisher, 2011), 102.

<sup>645</sup> Schacter, *The Seven Sins of Memory*, 157 -158.

cannot overcome time and space gaps in the same way it can when the two hemispheres are connected. In this way, the left hemisphere seems to create the illusion of the unified self. The assumption here is that, in healthy people, the division between the two hemispheres is the same as in split brain patients—that the left hemisphere probably behaves as the interpreter and is responsible for changing representations so that they cohere with the present context, whereas the final mental interpretation created by input combined from two hemispheres. This means that literal representations succumb to what Gazzaniga has dubbed the “interpretator.” However, this kind of confabulation remains unconscious and becomes clearly manifest only in people with split brain.<sup>646</sup> In short, split brain studies show that our conscious experiences of episodic and autobiographical memories are constructed by unconscious process. We are unaware that our interpretations stems from absent information, unaware of the role the left hemisphere plays in suppressing information in order to create a coherent interpretation of reality. Of course, without interpretations, we could not create meaning out of strictly literal representations, but, however, we think that our perspectives and memories represent reality literally often even when presented with evidence to the contrary. Incorporating key findings from neuroscience, we can describe the action of the left hemisphere in relation to the right hemisphere as the unconscious of the conscious, as the process that underlies and enables the creation of conscious meaning. The interaction between these hemispheres enables us to create a unified image of ourselves that is formed by combining of literal representation of reality with interpretations and manipulations of contradicted component.

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<sup>646</sup> Gazzaniga, Who’s In Charge? Free Will and the Science of the Brain, 81 -83.

## **Intentionality**

It is not possible to distinguish memory from imagination by belief since belief does not track the constructive process of memory and the involvement of imagination during this constructive process. If memory and imagination are not distinguished by quality of their content or by belief, what other criteria might help us distinguish between them?

While these two cognitive capacities can coincide and represent the same content and emotional effect, one might claim that their intention differs. One possibility to resolve this deadlock is to define cognitive acts according to one's inferential relations to their content, Husserl's terms, by its intentionality. Casey, who follows Husserl, maintains that intentionality is the principle that underlies and defines each mental act. Every mental act has own structural properties of intentionality, and every mental act intends objects in a different way. The intentionality of imagination is "could be," "might be," or "cannot be," while, in memory, we refer to the represented content as having happened. If an image or linguistic expression is associated with the imaginary, it is imagination and if it is associated with the past, then it is memory.

Representations can thus refer to different kinds of awareness and be regarded, one time, as a memory and, at another time, as imagination, even if these two representations are exactly the same phenomenally. Thus, what distinguishes between memory and imagination is their underlying attitudes and awareness. For Urmson, the initially intended and chosen attitude indicates the criterion for success and fulfillment, and, as a result, determines the type of the representation. He writes,

"The answer that I have to offer to the original question is by now, no doubt, sufficiently obvious. We do not have to look for any special features of our mental

pictures or of the tale we tell, nor need we ascertain their relationship to reality or to anything else. All we have to do is to know what criteria of success are applicable, and that is a question which depends upon our own intentions...We are imagining if some such criteria of success as general verisimilitude, or interestingness are the relevant ones.<sup>647</sup>

Urmson emphasizes the intention of the mental event and whether the intention was fulfilled. If, when we intend to recollect, then the intended event is recollection, while if we intend to imagine, then the intended event is imagination even if it may resemble or be identical with a representation of a past event. Intentions are determined by our awareness and conscious goals. However, what if I had no intention, or if it was automatically exercised without my awareness? It may appear that I meant to represent a past occurrence, but I could actually not really represent past occurrence but instead imagine an alternate event. Intention alone is thus not a sufficient criterion for a cognitive act, and linkage between intention and belief is necessary. Intention and belief are not separated, but often operate together. It is not clear whether belief determines the way we intend the content, or whether it is intention that determines the belief. However, not only does belief fail to serve as the criterion distinguishing memory and imagination, but also intention does not enable this distinction. If belief determines the intention then, when the belief is false, the intention is also false, but there is no way to know of this falsity. Alternatively, if intention first determines the attitude we attribute to the content, and is only then accompanied by belief, belief does not have an immediate relation to the content but it is mediated by the attitude.

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<sup>647</sup> Urmson, Memory and Imagination, 87 -88.



Neuroscientific findings regarding memory formation have destabilized the notion that episodic and especially autobiographical memories can be justified as a source of factual truth, challenging the way we understand the process of remembering. If neuroscience does, indeed, undermine the veridicality of memory, do these findings mean that memory has additional functions? What might these functions be? What might be the role of memory repression or inhibition?

### **Function - The process of adjustment**

As emphasized, neuroscientific theories of memory provide a new framework for rethinking memory. This framework might suggest that we should shift our attitude towards episodic and autobiographical memory away from broadly epistemological to being functional. Addressing why memory involves a constructive process of piecing together bits and pieces of information rather than something more akin to a direct replay of the past raises the hypothesis that a veridical representation of the past is not the optimal functioning of human memory system. This raises further questions about whether memory may have other roles as well. Does memory's flexibility give us benefits at the expense of accuracy and trustfulness? What is the function of memory if it does not store and retrieve exact replicas of experience?

Accuracy is far from being the functional goal of memory. Recollecting meets other needs such as the wish to give a good impression, to reconstruct the past in a way that we desired it, to create self consistency, etc. The reconstructive mechanism of episodic memory serves general and fundamental purposes that enable these needs. Researchers who grappled with this issue have proposed various reasons why human memory, in contrast to video recorders or computers, does

not store and retrieve exact replicas of experience.<sup>648</sup> One hypothesis suggests that episodic and autobiographical memories reconstruct past experiences for present purposes and memory distortions reflect the operation of adaptive processes. Neuroscientists do not refer to memory distortions in healthy people as weakness or failures of the system, but as byproducts of a more adaptive evolutionary mechanism.<sup>649</sup> This byproduct reflects a tradeoff between the ability to, on the one hand, accurately represent the past and, on the other hand, adapt and adjust memories to new circumstances. That is, we forget and distort our memories of the past in order to adapt and adjust to the changing world. In fact, in a world of constantly changing environments, literal recall is significantly less important than the need for one's memory system to reorganize, revise, and modify memories to conform to current beliefs, attitudes, and emotional needs.<sup>650</sup>

However, adapting the past to the present is not the only function newly ascribed to memory. Researchers have shown that memory is not necessarily about the past, but is even more about the future. Indeed, while memory is the ability to recall previous experiences, recall itself is not solely directed toward the past but is guided by the present for the service of the future. Thus, the current hypothesis explaining the function of constructive episodic memory states that this function allows individuals to simulate and imagine future episodes, happenings, and scenarios. Since the future is not an exact repetition of the past, simulation of future episodes requires a complex system that can draw on the past in a manner that flexibly extracts and recombines elements of previous experiences—a constructive rather than a reproductive system. Episodic

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<sup>648</sup> Schacter, *The Seven Sins of Memory*, 6, 184; Larry R. Squire, "Memory and Brain Systems", in *From Brains to Consciousness? Essays on the New Sciences of the Mind*, ed. Steven Rose (Princeton, N.J. : Princeton University Press, 1998).

<sup>649</sup> Schacter, *The Seven Sins of Memory*, 6, 184.

<sup>650</sup> Yadin Dudai, "Reconsolidation: the Advantage of Being Refocused", 175.

memory is an open system which allows other elements to be integrated. Thomas Suddendorf and Michael Corballis write,

“The fact that episodic memory is fragmentary and fragile suggests that its adaptiveness may derive less from its role as an accurate record of personal history than from providing a “vocabulary” from which to construct planned future events (and perhaps to embellish events of the past). It may be part of a more general toolbox that allowed us to escape from the present and develop foresight, and perhaps create a sense of personal identity. Indeed, our ability to revisit the past may be only a design feature of our ability to conceive of the future.”<sup>651</sup>

And, more specifically, Conway maintains that episodic memories preserve information that is highly relevant to goal processing, plan execution, motives, outcomes, and evaluations.<sup>652</sup> Episodic memories are integrated into autobiographical memory because of their relevance to longer-term goals and, consequently, to the future.<sup>653</sup> Alternatively, the process of forgetting occurs because of the non-relevance of these memories to future goals. Autobiographical memories function to ground and harmonize memories of past experiences with the self and its goals. It might be claimed that negative and stressful experiences lead to a reduction of the structural plasticity (although even memories of traumatic events such as flashbulb are not

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<sup>651</sup> Thomas Suddendorf and Michael C. Corballis, “The Evolution of Foresight: What is Mental Time Travel, and is it Unique to Humans?” *Behavioral and Brain Sciences*, 30, (2007): 301-302. See also Thomas Suddendorf and Corballis M.C., 1997, 133–167; Thomas Suddendorf and Busby, J., “Like it or not? The Mental Time Travel Debate,” *Trends in Cognitive Sciences* 7 (2003):437–438.

<sup>652</sup> Martin, Conway, “Sensory–Perceptual Episodic Memory and its Context: Autobiographical Memory,” *Philosophical Transactions: Biological Sciences*, Volume 356, issue 1413 (September 29, 2001): 1375.

<sup>653</sup> Martin, Conway, “Episodic Memories,” *Neuropsychologia* 47 (2009): 2306.

immune to error and distortion).<sup>654</sup> This may support the idea that the normal function of memory is to form constructive, plastic memories since, in cases of traumatic memories, the memory system as a whole loses plasticity and is, as a result, far less efficient. If our memories would not be modified according to the present or prospective future, a discrepancy would emerge. Memories may represent the past exactly as it was, but this representation would not let us absorb changes. Since the present itself is in perpetual change, the memory of the past must have the same dynamic nature. Consistent with this hypothesis, neuropsychological and neuroimaging evidence show that there is overlap in the psychological and neural processes involved in remembering the past and imagining the future.<sup>655</sup> The constructive episodic simulation hypothesis does not imply that the only function of episodic memory is to allow us to simulate and imagine future events, nor do neuroscientists believe that its role in simulation of the future constitutes the sole reason why episodic memory is primarily constructive rather than reproductive. Considerations such as economy of storage are also relevant to understanding why the system does not simply preserve rote records of all experience: compressing information into a gist-like representation may protect the memory system from overload.<sup>656</sup> But overall, the reconstructive nature of memory takes on significance as it blurs the border between memory and imagination.

### **Misconception of memory**

These suggestions lead to further questions about prevailing misconceptions of memory.

Although it has been several decades since researchers have uncovered the dynamic character of

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<sup>654</sup> Markowitsch and Welzer, *The Development of Autobiographical Memory* 107.

<sup>655</sup> Schacter and Addis, "The Cognitive Neuroscience of Constructive Memory: Remembering the Past and Imagining the Future," 773–786.

<sup>656</sup> Schacter D.L., *The Seven Sins of Memory*, 2001.

memory, and the view that memory is reconstructive is not new,<sup>657</sup> the prevailing idea regarding memories is that they are stored changelessly and permanently and that remembering is accurate.<sup>658</sup> The determination and the certainty that we feel regarding our memories do not correspond to the real state of our memories. What is the reason for this discrepancy between the neuroscientific view of the reconstructive nature of memory and the layman's spontaneous conception of memory as an accurate representation of the past? Are we deluded by a wrong concept of memory? If the answer is yes, another question follows — is it the beliefs accompanying our memories that deceive us or our false concepts of memory which misleads? The question is whether memory itself plays us false, or whether our concept of memory is what plays us false. If we change our idea of memory and will be aware that remembering is a complex process that involves various components only one of which is the past events themselves, will we experience our memories in a different way?

It seems that being aware of the dynamic nature of memory will not necessarily change the way we experience memory. It might be that memory persistence or readjustment themselves cause this faulty belief. Readjustment takes place without conscious awareness as it reorganizes our memory coherently and leaves us with the feeling that the representation is faithful and accurate. The changes are inaccessible to us unless we take an exact record of our activities as, for example, neuro- and cognitive psychologists do in experiments. Readjustments reorganize our memory coherently and leave us with the feeling that the representation is faithful and accurate.

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<sup>657</sup>Bartlett introduces the idea that memory is a reconstructive process. See, Bartlett, F., C., *Remembering: A Study in Experimental and Social Psychology*, (Cambridge: Cambridge University Press, 1932); Neisser Ulrich, *Cognitive Psychology*, (New York: Appleton Century Crofts, 1976).

<sup>658</sup>Daniel Wright and Elizabeth Loftus, "Eyewitness Memory", in *Memory in the Real World*, ed. Gillian Cohen and Martin Conway, (New York: Psychology Press, 2008), 93. See also, Benton, T. R., Ross, D. F., Bradshaw, E., Thomas, W. N., & Bradshaw G. S., "Eyewitness Memory is still Not Common Sense: Comparing Judges and Law Enforcement to Eyewitness Experts," *Applied Cognitive Psychology* 20, (2006): 115-129.

Memory and belief are not separated, but unified in one process. The feeling of unity and coherency is important for maintaining a coherent sense of self, and in cases where belief and memory of a past event diverge, cognitive dissonance might arise.

## Conclusion

Contemporary findings in neuroscience have led to ambiguous ontological portraits of memory and imagination and undermined conventional epistemological assumptions about these cognitive acts. Neuroscience emphasizes the commingling between memory and imagination. Current hypotheses maintain that memory and imagination are closely associated cognitive functions that constantly interact. As a result, a memory is never a pure memory or an exact copy of previous experience, but, rather, an ongoing dynamic and constructive process that incorporates different mental and emotional states at the time of recalling, modifying the original experience. Every process of storing and activation (recalling) of a memory fuses the past experience with new information as mediated by imagination. Thus, imagining has a central role in constructing memories and is integrated in the most mundane memories; it elicits, enhances, or confabulates memories. It is an active integrating process that is employed to reconstruct and unify already existing memories and thoughts with new information.<sup>659</sup> New information, when incorporated into old memories via imagination, fills gaps when forgetting, external counter-evidence, information gaps, or memory contradictions occur. We, for example, fill gaps with imaginative construction of what could have plausibly occurred in order to make meaning and sense out of experiences that took place. Imagination also engages in a form of interpretation. There is no one genuine description or interpretation of past events. We interpret the same event in variety of sometimes even contradictory ways. We emphasize one aspect at the expense of other aspects. Thus, the past is derived from the temporal perspectives of the present,

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<sup>659</sup> Bray, Charles William, "Recollection and Imagination," in **Introduction to Psychology**, Ed. Edwin Garrigues Boring, Herbert Sidney Langfeld, and Harry Porter Weld, (New York : J. Wiley & Sons, Inc. ; London : Chapman & Hall, Ltd., 1939): 353-354.

perspectives that also shift over time. At different times, we occupy different perspectives. Our memories endure, but go through changes of perspectives. It is through the mediation of imagination that memories are changed to include new and different factors. On the other hand, it is the constructive mechanism of episodic memory that underlies and serves as the resource for imagination. Thus, imagination, whether pure imagination or constrained by rational structures, derives from and depends on the flexible constructive mechanism of episodic memory.

Imagination and memory both utilize information that is stored in the episodic memory system and organize this information in new ways depending on the demands of the present. Their proximity and communal interaction between the two is not only present in acts of recalling or imagining. Rather, the close constructive interaction and the collaboration between memory and imagination also shape other cognitive acts such as various forms of self projections.

The neuroscience of memory formation leads us to question our prior assumptions by undermining the distinction between memory and imagination and challenging criteria commonly used to distinguish between the two. These insights, then, may compel us to shift our definitions of memory and imagination away from those based on epistemology and towards those based on function and process. Memory is to be defined as a mechanism that does not accurately represent the past, but, instead, represent the past as filtered through the present and the demands of the future.



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