

1 Surveying the Imagination Landscape

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O Imagination, you who steal men so
 From outer things that they would miss the sound
 Should in their ears a thousand trumpets blow,

 What moves you then, when all the senses drown?
 A light moves you, that finds its form in heaven,
 By itself, or by the will that guides it down.¹

Let us reflect on the image presented in Figure 1.1. It shows a fragment, the remains of a statue from circa 1353–1336 BCE.² Although several key features are missing, we readily recognize a human face. If asked to imagine what the rest of the head might look like, we have little trouble undertaking this mental reconstruction. We can alter the features of the summoned image to fit the description of man or woman, belonging to the peasantry or royalty. We can imagine a different headdress accompanying a queen of ancient Egypt compared to a goddess of ancient India. Indeed, we could go much further into the realm of hypotheticals by contemplating the potential musings of the creator of this work, its subject, and its audience.

This ability to conjure up images, ideas, impressions, intentions and the like: This is the imagination at work. The conceptual space it spans is stupendously vast, stretching across the real and the unreal, the possible and the impossible. Its workings are spontaneous and deliberate, ordinary and extraordinary, conscious and unconscious, deriving from the outer world external to our bodies as well as our inner world. The word “imagination” is therefore a particularly curious one. Because if “words are really the history of people’s agreement about things,”³ then what we apparently agree on is that this word is one that can be imbued with an exuberance of disparate meanings that emerge from across the incalculable breadth and depth of human experience that constitutes our mental lives. A key point to note right at the outset is that “we use imagination in our ordinary perception of the world. This perception cannot be separated from interpretation. Interpretation can be common to everyone, and in this sense ordinary, or it can be inventive, personal and revolutionary . . . So imagination is necessary to enable us to recognize things in the world as familiar . . . but it is also necessary if we are to see the world as significant of something unfamiliar” (Warnock, 1976: 10).

1 Dante (Purgatorio XVII, 25) as quoted in *Six Memos for the Next Millenium* (Calvino, 2016).

2 Available online: www.metmuseum.org/art/collection/search/544514.

3 Quote from Edwin Schlossberg speaking on the Design Matters with Debbie Millman podcast on March 5, 2018.



Figure 1.1 *Fragment of a queen's face*

Domains of the Imagination

In extolling the wonders of the imagination, Eva Brann (1991) charted the territory as follows: “First it represents the appearances, clarified, within its own space; it absorbs them, beautified into its own visions; it projects them back as rectifying transparencies upon the world. And then it proceeds to captivate thought, inciting it to pierce these imaginative panoramas and to transcend them in search of their unseen core” (Brann, 1991: 786). This magnificent statement speaks to the sheer heterogeneity associated with the concept, which poses a considerable problem for scholars of the imagination who seek to define it. This is because defining something necessitates grasping its true nature, verbalizing this understanding accurately and comprehensively, and, in doing so, delimiting the expanse of this idea – a formidable challenge for a concept as expansive as the imagination. Most scholars tend to shy away from doing this and instead restrict their focus to one or another specific facet of the imagination. The option of leaning on the work of lexicographers is therefore warranted and, fortunately, is also particularly useful in the present circumstance, given the meticulous record on hand. The Oxford English Dictionary currently attributes five meanings to the word “imagination”⁴:

⁴ “imagination, n.” OED Online, Oxford University Press, March 2018, www.oed.com/view/Entry/91643.

1. (a) *“The power or capacity to form internal images or ideas of objects and situations not actually present to the senses, including remembered objects and situations, and those constructed by mentally combining or projecting images of previously experienced qualities, objects, and situations. Also (esp. in modern philosophy): the power or capacity by which the mind integrates sensory data in the process of perception.”* (b) *“An inner image or idea of an object or objects not actually present to the senses; often with the implication that the idea does not correspond to the reality of things. Also: †the action or an act of forming such an image or idea (obs.).”*
2. *“The mind considered as engaged in imagining; a person’s mind, or a part of it, represented as the place where images, ideas, and thoughts are produced and stored, or in which they are contained. Formerly also: †the inner operations of the mind in general, thinking; thought, opinion (obs.).”*
3. *“The mental consideration of future or potential actions or events.”* (a) *“The scheming or devising of something; a plan, scheme, plot; a fanciful project. Obs.”* (b) *“A person’s impression as to what is likely; expectation, anticipation. Obs.”*
4. *“The tendency to form ideas which do not correspond to reality; the operation of fanciful, erroneous, or deluded thought. Also: an individual’s fanciful erroneous, or deluded thinking.”*
5. *“The mind’s creativity and resourcefulness in using and inventing images, analogies, etc.; poetic or artistic genius or talent. Also: an individual’s poetic or artistic genius or talent.”*

The categories of meanings detailed in this entry bear striking overlaps with many of the connotations evoked in Leslie Stevenson’s twelve conceptions of imagination (Stevenson, 2003) (Figure 1.2).⁵ This philosophical classification is enormously useful because it gives us a tangible overview of the many states that can be said to exemplify operations of the imagination. Our imaginations aid our perception of the current external reality as perceived through our sense organs. Our imaginations allow us to conceive of our former external realities. Our imaginations render it possible to fabricate alternative realities and fictional realms that we have never experienced in quite the same manner before. Our imaginations facilitate our ability to reconstruct events from the real past, the counterfactual past, and the potential future. Our imaginations enable us to fantasize aimlessly and problem-solve purposefully. Our imaginations impel us toward creative labor in the service of beauty, truth, and wonder. Through our imaginations, we can savor the fruits of creative labor. And so on.

The advantage of having such a classification is that it captures much of what is vital about the immense complexity that is the imagination in a manner that stands to be of value to theorists across academic traditions. The disadvantage is that it may be deemed too wide to be of immediate utility to empiricists who are seeking to bridge different aspects of the imagination. Such a classification also sidesteps the fact that there are several discrepancies in our understandings of the nature and the workings of the imagination.

5 An infographic depicting the twelve conceptions of imagination, published by the Open University, can be accessed at tinyurl.com/12conceptions.

“The ability to think of something that is not presently perceived but is, was or will be spatio-temporally real.”	“The ability to think of whatever one acknowledges as possible in the spatio-temporal world.”	“The liability to think of something which the subject believes to be real, but which is not real.”
“The ability to think of things that one conceives of as fictional, as opposed to what one believes to be real, or conceives of as possibly real.”	“The ability to entertain mental images.”	“The ability to think of (conceive of, or represent) anything at all.”
“The non rational operations of the mind, that is, those kinds of mental functioning which are explicable in terms of causes rather than reasons.”	“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.”	“The sensuous component in the appreciation of works of art or objects of natural beauty without classifying them under concepts or thinking of them as practically useful.”
“The ability to create works of art that encourage such sensuous appreciation.”	“The ability to appreciate things that are expressive or revelatory of the meaning of human life.”	“The ability to create works of art that express something deep about the meaning of life, as opposed to the products of mere fantasy.”

Figure 1.2 *Leslie Stevenson's twelve conceptions of the imagination*

Disagreements About the Imagination

Our construals of what the imagination does and does not entail differs across academic traditions. Some of the factors that may explain this misalignment include that (a) some disciplines have devoted much study to the imagination for centuries (e.g. philosophy, see Kind, 2016) whereas others are recent additions to the playing field (e.g. neuroscience), (b) there is relatively little cross-talk between disciplines on most topics of the imagination, and (c) some aspects of imagination are better studied than others. To take the disciplines of psychology, philosophy, and neuroscience as examples, the topic of mental imagery is a subject of concerted engagement and effort across all three disciplines (e.g. Hubbard, 2010; Pearson and Kosslyn, 2015; Thomas, 2014), and it has been commensurately associated with the most progress. Other topics of the imagination have had less luck. The topic of engaging with fiction, for instance, is studied widely in philosophy (e.g. Nichols, 2006), narrowly in (primarily developmental) psychology (e.g. Taylor, 2013), and only sparsely in neuroscience (e.g. Abraham, von Cramon, and Schubotz, 2008). Interest in some topics is also mainly confined to single disciplines. For instance, episodic future thinking is an actively studied topic chiefly within neuroscience (e.g. Schacter, 2012), and, until fairly recently, creativity was largely limited to the corridors of psychological study (e.g. Sternberg, 1999).

This lopsided distribution of focus means that there are several differences in our understandings of what constitutes the imagination. For instance, in the philosophical tradition (Gendler, 2013) mental states of the imagination are often framed as

being distinct from other mental states like remembering, conceiving, believing, and desiring. However, such distinctions are not held in quite the same manner in other disciplines. For instance, abundant psychological and neuroscientific evidence has indicated that the distinction between remembering and imagining is far more blurred than is typically assumed. (Re)constructive processes are held to commonly occur when thinking about a personal event (e.g. having a baby) that could take place in the future (episodic future thinking or prospection), that could have taken place in the past (episodic counterfactual thinking), and that did actually take place in the past (episodic memory or retrospection) (Schacter, 2012). Interpretative distortions are well documented in the context of eyewitness testimonies and these demonstrate that memory retrieval processes critically fidelity of recall – creating a gap between the reality or truth of what occurred during an event and one’s own belief of what transpired (Loftus, 1992). The content of one’s thoughts during daydreaming and mind-wandering are often reflective of desired mood states, social goals, and the like (Poerio et al., 2015). And within the domain of mathematical reasoning, which necessitates conceiving of abstract relations, both “inventive” and “imagistic” aspects of the imagination are considered crucial for good reasoning (Perkins, 1985). Comparative claims have been made for the connection between reason and inventiveness in literature, in that “the keener and clearer is the reason, the better the fantasy will it make” (Tolkien, 2006: 144).

Differentiations additionally emerge when considering conceptualizations of the overarching purpose of the human imagination, with many scholars emphasizing mental simulation as the key role (Currie and Ravenscroft, 2002; Markman, Klein, and Suhr, 2009), while others hand that honor to novel idea generation (Gerard, 1946). The expansive conceptualization of the imagination also means that it is necessarily intertwined with several other illustrious constructs of the human psyche. Language is one example: Speech is held to bridge the gap between one’s inner world of “visionary creativity” and the outer “object-ridden” world (Shulman, 2012: 8). The same is true of consciousness. Take this statement by the philosopher Nigel J. T. Thomas: “Imagination is what makes our sensory experience meaningful, enabling us to interpret and make sense of it, whether from a conventional perspective or from a fresh, original, individual one. It is what makes perception more than the mere physical stimulation of sense organs. It also produces mental imagery, visual and otherwise, which is what makes it possible for us to think outside the confines of our present perceptual reality, to consider memories of the past and possibilities for the future, and to weigh alternatives against one another. Thus, imagination makes possible all our thinking about what is, what has been, and, perhaps most important, what might be” (2004, as cited in Manu, 2006: 47).

Compare it with the first lines of the Mandukya Upanishad,⁶ which outlines four states of consciousness (Eknath and Nagler, 2007: 203):

6 One of the ancient Sanskrit texts on Hindu philosophy. The exact chronology of this upanishad is still uncertain (dated between the fifth century BCE and the second century CE).

*AUM stands for the supreme Reality.
It is a symbol for what was, what is,
And what shall be. AUM represents also
What lies beyond past, present, and future.*

The similarities in the essence of what is being conveyed are undeniable.

Weaving a Common Thread

So how do the components of imagination relate to one another? Several scholars have proposed theoretical frameworks that highlight emergent properties that bind together different aspects of imagination. These accounts differ considerably in the degree to which they are “strictly argumentative or systematic-analytical” compared to “loosely ruminative and comparative-historical” (nomenclature from Strawson, 1982: 87). Examples of contemporary postulations include (a) that pretense is a precursor to understanding fiction (Harris, 2000), (b) that engagement with paintings, novels, films, and children’s games have their root in the representational capacity to make believe (Walton, 1990), and (c) that imaginative “what if” operations spring from semantic “what” and spatial-episodic “what-where-when” processes (Abraham and Bubic, 2015).

The purpose of this handbook is to follow in the spirit of such approaches by bringing together a range of academic and applied perspectives on the human imagination from diverse traditions of study and practice. No single volume to date has showcased a multidisciplinary snapshot of our understandings of this vast and heterogeneous knowledge domain. The objective of arriving at a point from which we will be able to develop a more systemic understanding of this singularly complex capacity would be too ambitious. But aspiring toward this goal could be the wind in the sails that will, at the very least, bring us several steps forward from where we currently find ourselves. After all, in entering a shared diverse communicative space, we come face-to-face with ideas and approaches from unfamiliar yet potentially informative perspectives. And understanding the specific questions that drive each field, as well as the subtle connotations of the jargon employed in their discourse, will enable more efficacious cross talk between disciplines. In channeling this exploration, this handbook adopts a recently proposed neurophilosophically informed framework that aims to deliver a holistic understanding of the workings of the human imagination (Abraham, 2016) (Figure 1.3).

Under this framework, the different experiential and cogitative states of the imagination are allocated to one of five thematically cohesive clusters organized around central operational features. The category of “mental imagery-based forms of the imagination” includes perceptual (visual, auditory, etc.) and motor forms of imagery that, owing to the strong overlaps with perception and action, draws their impressions from the external milieu. In contrast, our internal milieu, in the form of interoceptive and emotional awareness, is the source material for processes that belong to the category of “phenomenology-based forms of the imagination” that are

Mental imagery (perceptual/motor)	Intentionality (recollective)	Novel combinatorial (generative)	Phenomenology (emotion)
Visual imagery	Mental state reasoning/theory of mind	Creative thinking	Aesthetic engagement
Auditory imagery		Hypothetical reasoning	Visual art-related aesthetic response
Musical imagery	Moral decision-making	Counterfactual thinking	Music-related aesthetic response
Gustatory imagery		Hypothesis generation	Literature-related aesthetic response
Tactile imagery	Mental time travel/future thinking		
Olfactory imagery	Autobiographical/episodic memory		
Motor imagery			
...	
Altered States			
Dreams, hypnosis, drug-induced states, meditative states, hallucinations, out-of-body experiences, delusions, confabulations ...			

Figure 1.3 *A neurophilosophically informed classification of the imagination*

involved in the aesthetic response during the appreciation of visual arts, music, literature, and so on.

The underlying commonality across operations that fall under the category of “intentionality-based forms of the imagination,” such as mental state reasoning and mental time travel, is that they trigger processing that is primarily recollective in nature in order to arrive at the most plausible explanation of a given situation from the standpoint of what fits best with what one knows to be true. In contrast, when a context necessitates moving beyond what is known to seek new solutions, explanations, or expressions, processes belonging to the category of “novel combinatorial forms of the imagination” such as creativity, counterfactual reasoning, and hypothesis generation are called into play. The final category is that of “altered states of the imagination,” which encompass ordinary states, such as those experienced during dreaming and meditation, as well as atypical states that come about via temporary or permanent neurological insult, such as out-of-body experiences, delusions, and hallucinations.

The five latter sections of the handbook (Parts II-VI) are organized in line with this classification. Each section features several expert contributors showcasing their unique ideas and perspectives on themes that are of direct relevance to each thematic category.

We commence our exploration of the imagination (fittingly) with the world of ideas in Part I, where theoretical frameworks on the imagination from a range of different disciplines are presented. The ten chapters cover perspectives from evolution (Fuentes: Chapter 2), anthropology (Koukouti and Malafouris: Chapter 3), archaeology (Shanks: Chapter 4), Western philosophy (Kind: Chapter 5), and Eastern philosophy (Ram-Prasad: Chapter 6). Perspectives from psychology and neuroscience place emphasis on prediction (Jones and Wilkinson: Chapter 7), memory (Schacter and Addis: Chapter 8), creativity (Dietrich and Zakka: Chapter 9), and sociocultural factors

(Zittoun, Gl aveanu, and Hawlina: Chapter 10). The final chapter in this part covers developments in the field of artificial intelligence that are of potential relevance to the imagination (Davies: Chapter 11).

The seven chapters in Part II of the handbook explore key questions and issues of interest in mental imagery-based forms of the imagination. The domains covered include visual imagery (Pearson: Chapter 12), musical imagery (Jakubowski: Chapter 13), motor imagery (Guillot: Chapter 14), temporal imagery (Viera and Nanay: Chapter 15), emotional imagery (Blackwell: Chapter 16), and multisensory imagery (Berger: Chapter 17; Deroy: Chapter 18).

Part III is devoted to intentionality-based forms of the imagination. The eight chapters in this section cover philosophical perspectives on memory and imagination (Michaelian, Perrin and Sant'Anna: Chapter 19), neuroscientific and psychological perspectives on self-referential and social imagination (Arzy and Dafni-Merom: Chapter 20; Raffaelli, Wilcox, and Andrews-Hanna: Chapter 21; D'Argembeau: Chapter 22), developmental roots of mental state reasoning and the phenomenon of imaginary friends (Davis: Chapter 23), the dynamics of moral reasoning (Ganis: Chapter 24; Anderson and Barbey: Chapter 25), and prospective future-directed thought processes (Bulley, Redshaw, and Suddendorf: Chapter 26).

The seven chapters of Part IV cover perspectives on novel combinatorial forms of the imagination. These include an integrated model for episodic and semantic retrospective and prospective thought (Irish: Chapter 27), the role of the imagination in the construction and comprehension of fictional narratives (Quinlan and Mar: Chapter 28), developing the understanding of the distinction between reality and fantasy (Woolley and Nissel: Chapter 29), using Buddhist practices in exerting the imagination for novel perception of deep realities (Klein: Chapter 30), hypothetical reasoning and mental simulations (Ball: Chapter 31), counterfactual thinking and its impact on morality (Byrne: Chapter 32), and a summary of influential neuroscientific theories on creative thinking (Jung: Chapter 33).

Part V showcases seven chapters that cover features central to phenomenology-based forms of the imagination. They include understanding the aesthetic experience from the perspectives of philosophy (Davies: Chapter 34), psychology and neuroscience (Vartanian: Chapter 35; Zaidel: Chapter 36), and art history and society (Hutton: Chapter 37). Also featured are practitioner accounts of the role of the imagination in dance (Christensen and Borhani: Chapter 38) and music in the context of child development and community healing (Osborne: Chapter 39).

Part VI casts the spotlight on altered states of the imagination. Its eight chapters explore cross-disciplinary perspectives on dreaming (Windt: Chapter 40; Domhoff: Chapter 41), aphantasia (Zeman: Chapter 42), hypnosis (Terhune and Oakley: Chapter 43), hallucinations (Collerton, Perry, and Bowman: Chapter 44), psychiatric disorders of the imagination (Crespi: Chapter 45), meditative states (Timalsina: Chapter 46), and the experience of flow (de Manzano: Chapter 47).

The final chapter of the handbook seeks to identify the patterns, themes, and concerns that emerge from the forty-six feature chapters across the six parts (Abraham: Chapter 48). The hope is to attempt this while being cognizant of an overwhelming tendency typical of empiricists and theoreticians in the traditions of

the social sciences and life sciences, which is just as true today as it was when articulated by Jean Starobinski in this astute observation published in his essay on “The Empire of the Imaginary” (Starobinski, 2001)⁷: “Contemporary psychology does not much like the notion of depth. When it does happen to resort to it, it is immediately to flatten depth into a readable and structured surface. According to this, there is in principle no mystery, no essential shadow. Yet, when it explores the behavior of men, it cannot fail to clash with this ascertainment: man is a strange being who likes to hide behind masks, and who constantly calls to the prestige of the hidden.”

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⁷ Unpublished translation by William Glover (reproduced with permission). Excerpt (page 220) from Jean Starobinski, *L’œil vivant* (Tome 2) – *La Relation Critique*. Paris: Éditions Gallimard (digital edition published in 2013).

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