

Habituation and wonder: embodied knowledge in Renaissance Italy's memory

Habituação e maravilha: saberes incorporados na memória da Itália renascentista

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Abstract: Renaissance techniques of memorization utilize the body, intentionally and precisely, to enhance memorization. The analysis of three Italian memory manuals from the late 1500 highlights an impressive expertise of the unique possibilities offered by an embodied acquisition of knowledge. Some concepts from current cognitive theory will help appreciate the efficacy and complexity of such techniques. This interdisciplinary reflection contributes to the delineation of a pre-Cartesian conception of human cognition.

Keywords: Memory; memorization; cognition; early modern; habit; wonder.

In the memory arts, the Aristotelian principle according to which “It is not possible to think without an image”² is particularly central. Nowhere more than in the intricate descriptions of memory palaces, i.e. imaginary architectures for mnemonic purposes, can we in fact witness the way this principle pervaded early modern conceptions of human cognition. Not only does the memory palace technique utilize this principle: it represents it. In the memory palace, ideas and abstract thought are converted into concrete, lived scenes. The effectiveness of such conversion is recognized through centuries of empirical proof: when using sense-derived images, memorization is faster and more durable. And while sight is the leading sense in this operation, the others are involved as well:

And once you prepared all this, start contemplating the images in those Loci in your mind, as if they were really there; and walking around, greet them, touch them, call them by name, talk with them, observe them again and again, frontally and from the sides. And repeat this exercise for two, three days in a row, or even more; until you will perfectly see that your Memory and Mind will present the images, and offer them in a straight or reverse order: as if they were right before your eyes. (Gesualdo, Plutosofia 23r)³.

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² In *De Memoria et Reminiscentia*, chapter 1, 449b 31- 450a.

³ This, as well as the following quotations, are my translations from the original Italian into English, if not otherwise indicated. The only exception is Della Porta's *L'Arte del Ricordare*, which was translated by Alberto Maggi and his students in 2012.

This study aims at highlighting and better understanding the role of the body within early modern (1500s) Italian conceptions of human cognition. Instead of looking for coherence with the time's theories, this analysis will focus on the principles and goals mobilized through the mnemotechnics, to reconstruct the functioning of memorization as portrayed within the manuals. Moreover, this study proposes a role for today's cognitive sciences in such exploration. A dialogue between Renaissance and current hypotheses about the same cognitive mechanisms, in fact, can be a fruitful way of operating, as demonstrated by the works of Miranda Anderson, Ellen Spolsky, Evelyn Tribble, and other scholars⁴. In Anderson's words, conflating current cognitive research with Renaissance discourses helps both perspectives "illuminate each other" (vii). In particular, today's scientific endeavors help identify and validate the mechanisms of early modern practices; on the other hand these latter ones point to the potential gains that would derive from recuperating the body as a central factor in human cognition.

In particular, what will be here analyzed is the process of forming different and coordinated kinds of long-term memories, as performed through the main technique among early modern practices: the memory palace. This was a very powerful device, which marshalled and coordinated several practices able to activate different abilities: from that of subconsciously retaining spatial information, to that of quickly incorporating new relevant data. These mechanisms mobilize different cognitive principles, recognized by Renaissance authors and 21st century ones alike. However, recognition of their mutual reinforcement, especially towards ready retrieval, and of the possibilities offered by embodied procedures, are peculiar to 16th century memory manuals. Indeed, after Cartesian dualism affirmed the ontological distance of body and

⁴ A non-exhaustive list of works approaching the early modern period from a cognitive angle would include: ENENKEL & NEUBER, *Cognition And The Book: Typologies Of Formal Organisation Of Knowledge In The Printed Book Of The Early Modern Period* (2005); SPOLSKY, *Word vs. Image: Cognitive Hunger in Shakespeare's England* (2007); TRIBBLE, *Cognition in the Globe: Attention and Memory in Shakespeare's Theatre* (2011); JOHNSON, SUTTON, TRIBBLE, *Embodied Cognition and Shakespeare's Theatre: The Early Modern Body-Mind* (2014); ANDERSON, *The Renaissance Extended Mind* (2015); CEVOLINI (ed.), *Forgetting Machines: Knowledge Management Evolution in Early Modern Europe* (2016); BANKS, CHESTERS (eds.), *Movement in Renaissance Literature: Exploring Kinesic Intelligence* (2018).

mind, we start witnessing the abstractification and eventually dismissal of memory arts' embodied practices. These events are not necessarily in a causal relationship; nevertheless, they are expressions of a worldview that we now identify as modern. As neurosciences and popular culture alike explore ways to reintegrate embodiment in Western culture, the study of these pre-modern manifestations of a body-mind unit can guide us in this reintegration, while deepening our understanding of historical as well as contemporary structures.

Memory manuals at a crossword of knowledge

When the memory arts get emancipated from the rhetoric manual during the 16th century, their presentation changes⁵; from the scanty, essential lists of precepts á la Petrus Ravennas' *Phoenix, sive de artificiosa memoria* (1491), we get to end-of-the-century works which are almost encyclopedic in intent. To this latter group belong the three books I selected as representative for this study, which show different ideological standpoints, as well as both geographical and social positioning on the part of their authors. However, they also show a similar intent toward popularization, grounded in the belief that this technique would increase awareness of, and agency over, one's cognitive processes.

The first is Lodovico Dolce's *Dialogo del Modo di Accrescere e Conservar la Memoria*, published by Sessa in Venice in 1562. This was the adaptation and translation of Romberch's *Congestorium Arificiosae Memoriae*, ca. 40 years prior. Dolce, operating from Venice, a major book-production center of the time, was a prolific translator and adaptor of texts toward a vernacular, printed dissemination. Andrea Torre points to the author's choice of texts for publication as intended toward both commercial success and the common good, where the second goal was prevalent. The *Congestorium*, which Torre reads as part of its author's effort to propose a Catholic perspective able to contrast and compete with the nascent Lutheran movement, is significantly recuperated by Dolce in Tridentine times. His effort to popularize a Scholastic-inspired Latin treatise on a rather obscure practice, can thus be interpreted as part of a Catholic effort to virtuously approach images (and the senses more in general). Recognizing the latter's cognitive power, such work indeed proposed education and training as

⁵ For a deeper treatment of the role of the memory arts in (the Italian) 1500s, ROSSI (1960) 27-39 and BOLZONI (2001).

efficient tools to manage the effects of sensory stimuli, such a reading contrasted the Protestant suspicion and opposition (at least in its self-narrative) toward a too active role of the senses in religious practices⁶.

The second book, Della Porta's *Arte del Ricordare* (Naples: Cancer, 1566) also proposes a project of dissemination of the memory arts for the common good. Unlike Dolce's however, Della Porta's book clashes with Tridentine scopes. Translated in Italian from a Latin draft by Dorandino Falcone da Gioia, with a close supervision of Della Porta himself, the book was republished in 1602, this time in Latin, under the title *Ars Reminiscendi*⁷. For Della Porta, the memory arts were an analytic tool used to investigate reality, rather than just to remember information. Translating the book in Italian indicates thus the intention of offering the tool to more and diverse kinds of peoples; significantly, while the later Latin version circulated freely, the vernacular one was banned by the Inquisition. As a particularly independent intellectual, this was not the only time Della Porta got into trouble with the post-Tridentine institution: his attitude towards knowledge and its dissemination was quite combative, and his theories were highly controversial. In this booklet, the strong emphasis on experience and on the physicality of a virtue-creating process surely did not help his case.

Lastly, Filippo Gesualdo's *Plutosofia* (Padua: Megietti, 1592)⁸, was another form of popularization of knowledge. A well-educated Franciscan, Gesualdo was appointed in that same 1592 by Pope Clemens VIII as moral and practical reformer of the Order in Tridentine fashion. The effectiveness of Gesualdo in this role, which won him several renewals, was due to his scrupu-

⁶ For an in-depth exploration of Protestant relationships with the senses, see J. M. BAUM, *Reformation of the Senses: The Paradox of Religious Belief and Practice in Germany*. An explicit take on memory in this sense can be found in chapter 5 of A. KVICALOVA's *Listening and Knowledge in Reformation Europe: Hearing, Speaking and Remembering in Calvin's Geneva* (133-160).

⁷ Maggi says that the Latin text "Besides the avalanche of classical references and the significant rearrangement of the single chapters, *Ars reminiscendi* differs from the Italian edition primarily in its more formal and austere tone, and the expanded definition of memory responds to this new rhetorical timbre." (25)

⁸ I here quote the *Plutosofia* from its original Paduan edition (digitized), I instead approach Dolce's and Della Porta's texts from their relatively recent editions curated by, respectively, Andrea Torre and Raffaele Sirri.

lousness and radicality. These characteristics emerged especially in his capacity, well visible in the *Plutosofia*, to translate abstract principles into simple precepts, applicable in the everyday. Most of Gesualdo's writings have been lost, but we know enough of them to observe his determination in proposing ways of organizing one's soul through the right habits, in numerous different fields, and to a wide range of people, from cardinals to the most ignorant friars, or even to laypeople.

In these books, theory and practice have become almost equal factors: the first mostly trying to contextualize and explain the second, which still constitutes the core of this genre. It is precisely while theoretically exploring the nature and behavior of the memory images, of their origins, and of their cognitive (thus moral) role, that the authors struggle. Such vivid and life-like scenes in fact, are problematic to justify in a cultural climate like that of the Council of Trent. On the other hand, the conceptualization of the memory arts was too reliant on previous theory to be compatible with the new philosophical trends enhancing empiricism, which were emerging from Paris to Padua. These authors' attempts are significant thus because in defending the feasibility of the techniques, they defy both conventional theories and the most innovative ones.

These three authors are representative of a specifically Italian combination of philosophical and practical positions, which is still underexplored and particularly interesting for a study of Renaissance cognition. These authors took the chance of expressing their position in the vernacular, and thus with a remarkable circulation, despite a potentially hostile climate. While Dolce's text was less controversial⁹, and Gesualdo's was protected by his curial role, Della Porta instead faced the risk fully, and his book was indeed strongly challenged. In all three cases, the problem emerges of a yet-uncharted, complex, and original theory of a body-mind unit in early modern Italy. The practice-centered nature of the manual genre is, in this instance, the stimulus for an unconventional, almost empirical, reflection on the nature of human

⁹ In the long introduction to his edition of the *Dialogo* by Dolce, Torre reads Romberch's original text as an act in favor of a specifically Catholic devotional practice involving the senses. However, Dolce's less political intent, the screen of translation (into the dialogic form, as well), and the original anti-Lutheran stance of the text, all contribute to lighten the political load of this text.

knowledge. The re-elaboration of ancient techniques for memorization shown in these books reveals a specifically early modern thought on the functioning of intellectual faculties, which is deeply embodied and personal. Especially in their preferred technique, the memory palace, these books show an understanding of human cognitive processes that is remarkably accurate even when compared with today's neuroscientific and cognitive studies.

Embodied cognition and personalization in the memory palace

Embodiment is here meant as the central role assigned to the body in cognitive processes, encompassing both conscious and unconscious actions and elaborations. This refers not only to the centrality of perception in processes of knowledge formation, in line with Aristotelian tradition, which attributes the origin of all information to lived experience. But also, to the vastly recognized extended nature of Renaissance cognition¹⁰; and to the widespread use, especially in practical disciplines, of the body as a center for intellectual elaboration of perceptive stimuli.

The memory palace incorporates Greek and Latin, as well as Medieval monastic traditions¹¹. It consists in the mental representation of physical spaces (*loci*, composing the palace), which could be humanbuilt or not, and which are filled by the memorizer with scenes and images (*imagines agentes*). Each of these latter ones represents a piece of information and is placed in a specific point of the palace, so as to keep them in the right sequence. The memorizer then mentally walks through the palace in the established order, seeing the images and remembering the concept or fact they represent. This rather cumbersome technique is described in almost every memory manual of the 16th century. The specific focus of early modern mnemonics on conscious retrieval, as opposed to, for example, procedural skills or rote repetition, is an expression of the general need of an oral culture thinker to access their knowledge. But it is also

¹⁰ For this, I refer to the above-mentioned works, especially JOHNSON, SUTTON, TRIBBLE (2014) and ANDERSON (2015) 114-115. For an explanation of how extension works in the early modern context, see ANDERSON's 3rd chapter of the same work.

¹¹ See CARRUTHERS AND ZIOLKOWSKI (2002) 1-31, for a brief treatment of the memory arts in the Middle Ages. For a recent approach to the Graeco-Roman tradition of Aristotle and the *Rhetorica ad Herennium*, see IGLESIAS-CRESPO (2022).

the result of a specific disciplinary history, which traditionally incorporated memory techniques into the repertoire of the orator. The scope of the memory arts was thus conceived not just in terms of structuring and storing information; but also, and especially, in terms of making information readily available for the time-sensitive activity of oral, and often impromptu, composition.

The rhetorical origins and catering of these techniques determined some of their key traits¹², e.g., the necessity to reduce retrieval time to the minimum change for; as well as a structuring of data on linear spaces (walking through a palace), mirroring the temporal development of a speech. These became impediments when Renaissance thinkers started applying memory techniques to rationalize post-Gutenberg amounts of available information. The memory arts tried to adapt to this information overload, preferring more flexible and modular spaces for their structuring; and less impactful, but possibly more complex, images to populate them. Both Schenkel's rectangular houses¹³ and Camillo's theater¹⁴ are examples of this evolution of the memory arts. In this essay, the focus remains on more traditional, but still sophisticated, examples of the memory palace. The authors selected, who published in Italy around the end of the 16th century, chose to stay within the received model: they saw a resource in its deeper involvement with the memorizer's first-person, physical experience.

Short-term to long-term through embodiment

The main task of the traditional memory palace technique is that of quickly and orderly embedding information into one's memory, so that it can be readily retrievable for reuse. In contemporary terms, this translates into an intentionally crafted passage from short-term to long-term memory. This distinction of memory systems between short- and long-term is not unanimous in Cognitive Science: the scientific community is still divided on whether these workings and outcomes can be attributed to two distinct types of memory¹⁵. Nevertheless, the

¹² Again CARRUTHERS, in *The Craft of Thought* (1998) elaborates in depth on this relationship.

¹³ KUWAKINO in CEVOLINI (2016) 64-67.

¹⁴ For a description and an analysis of Giulio Camillo's theater, see Bolzoni's introduction to her edition of *L'idea del Teatro* (1991). See also IGLESIAS-CRESPO (2022b) in this volume.

¹⁵ See Cowan's chapter (n. 20) titled "What are the differences between long-term, short-term, and working memory?": *Essence of Memory*, the 169th volume of the *Progress in Brain Science* book series published by Elsevier (2008).

short-/long-term labeling is effective in explaining the operations registered, at least at the neurological level, which highlights the involvement and interaction of distinct brain areas. Moreover, this distinction helps accounting for the difference in practical results, lasting between milliseconds and minutes in the case of short-term memory, and up to a lifetime for long-term memory.

Not only the sheer distinction is controversial, but also the connection between the various types of memory. For example, the modal model by Atkinson and Shiffrin (1968)¹⁶ makes sense of such variance in terms of progressive transformations: from the myriad of data registered by the rapidly decaying sensory memory, some are selected as relevant and passed into short-term memory, which keeps them present for a few seconds or even minutes. Of these, those deemed most important are finally consolidated into long-term memory, where, if sufficiently remarkable or rehearsed, they can remain forever. The modal model has been outdated by more recent research, its linear movements countered by the empirical emergence of an undeniable complexity underlying human memory mechanisms. However, its structure is remarkably similar to that utilized by memory arts authors. Their scheme, derived from Aristotle and mediated to the West by his Arab commentators, divides the brain in chambers where different tasks are carried out¹⁷. The first chamber (*Sensus Communis*), in the frontal region of the brain, is dedicated to sensory stimuli, collected from the various parts of the body¹⁸ and converted into spiritual entities. These are then re-elaborated and refined in the next chambers, until they reach the last one, *memoria*, where they are finally stored¹⁹. Just like with

¹⁶ ATKINSON, R. C., & R. M. SHIFFRIN (1968), "Human memory: A proposed system and its control processes": SPENCE & SPENCE (1968), Vol. 2, 89-195.

¹⁷ VIDAL (2011) 33.

¹⁸ Aristotle in *De Anima* does not speak of a precise place for the combination of sensory stimuli. However, the Galenic re-elaboration of the Arab commentators brings more attention to the brain, and permits the creation of this first chamber, known as *Sensus Communis*.

¹⁹ About the first point: the simulacrum (memory image) is made into us mostly from the senses, who receive the sensory images (simolacri) and then, through those same senses, like though windows and doors, they pass into the inner chambers of the *Sensus Communis* and *Memoria*, where they settle. ... As to the second point: our memory not only receives the simolacri, which were wholly in the senses. But also those imagined in our Cognitive

the modal model, albeit for different reasons, this Renaissance one too presents a main weak point: a difficulty in explaining the passage from sensory, immediate retention of information, to a more permanent, structured one²⁰.

While repetition is recognized by early modern and contemporary authors alike as a major factor of long-term memorization, other factors are not as clearly defined. Since memory arts authors are not constrained by scientific responsibilities, they can quite freely express their conclusions on the factors influencing the passage from short- to long-term memory. Often, the authors engage in theoretical explanations of such passages, which happens frequently in these encyclopedic manuals. Here, they struggle to either justify what are unmistakably embodied practices as the basis of the technique, or, as it often happens, to avoid the justification altogether --for instance, by juxtaposing several theories regardless of their contradictions, like Dolce does; or by affirming the failure of authorities in providing convincing explanations, like Gesualdo; or by refusing to venture into theory altogether, and relegating such enterprise to philosophers, like Della Porta.

Indeed, the memory palace notably resorts to embodied techniques both to acquire information in the form of sensory stimuli and to memorize them permanently. The palace is thus a device capable of making sensible all the information to be memorized:

Thus, following Aristotle's book on Memory, things perceived by the senses are already convenient for Memory: but things that are not perceived by senses, need to be mediated: it is necessary to link these things to sensory ones so that they can be remembered. From this principle we derive the Method of this Art, in which we make sentences or words remembered through sensory supports. GESUALDO 12v.

faculty, which can, contemplating those in our memory, connect a simulacrum with another and craft from it new images, which then get stored back into memory. GESUALDO, 7v.

²⁰ In following decades and centuries, the tendency was that of going toward a simplification of the model to three, and finally one, chamber. This evolution was already available to our authors: however, it eliminated the subdivisions that made it safe for them to point out the role of embodied techniques in intellectual enterprises. In a unified brain, sense-derived data circulated unrestricted by the multi-passage, flexible yet rigorous, purifying process ensured by separated chambers. The traditional theory instead justified the origin and destination of data as embodied, and reassured readers about the presence of built-in devices to contrast their sinful action within the brain.

Even though only imagined, the palace in fact translates abstract ideas into simulations of lived scenes, where the self roams, and explores with the senses. The almost empirical nature of these manuals' observations highlights a great efficiency of embodied practices in quickly and permanently creating long-term memories. In the palace, the most effective ways to perform this kind of memorization involve a body-mind combination. Hence, they harnessed, on the one hand, our capacity to remember how to navigate places we know very well; and on the other hand, our tendency to remember emotion-ridden events and scenes more promptly and permanently. The palace makes this process available for more abstract and distant data, by turning such data into physical entities, thus making them open both to the senses and to personal, even emotional, involvement.

For example, if I want to remember [the word] 'che,' [which] I imagine two 'oche.' [geese] To show that the letter at the first part of the word is an addition, we remove the heads from the geese and imagine them in this way so that the lack of heads in the image indicates that we must remove the first part of the expression. DELLA PORTA, 112 (Italian: 89)

Here we can see the transformation of an abstract word (an adverb) into a concrete (sense-involving) animate being: we recognize thus the principles of physicality, which is also employed to signal this transformation process: cutting the heads of the geese indicates that the "head" of the word "oche" needs to be cut, too. Moreover, to enhance the ability of the images to move emotions and senses, they should be animate and not just physical: whenever possible, like in this example, they should represent something capable of movement and interaction. That of the palace is thus an exquisitely embodied process: it relies on inner and outer senses; it utilizes in full one's autobiographical and contextual knowledge; it takes advantages of unconscious processes of the body itself. In the next section, we will see how these embodied elements are combined in the creation of long-term memories.

Hexis, Thaumathein, and the intentionality of the palace

There are then two main ways in which manuals teach how to create long-term memories: through "navigational" memory (roughly pertaining to *loci*), and through "emotional" memory (*imagines agentes*). These two approaches strongly resonate with today's distinction between implicit vs explicit

memory²¹, the two main types of long-term memory. The first lies below the threshold of consciousness and manifests as spontaneous, effortless action, like walking or using a fork; the second instead regards information whose retrieval is intentional and conscious, like remembering that Dakar is in Senegal. In a different formulation that is as simple as effective, although there are many grey areas²², while implicit memory constitutes the “knowing how”, explicit memory is the “knowing what”.

Despite the neat distinction present in the palace itself – with *loci* and *imagines* constituting independent parts of the manual, and requiring in many cases a specific cognitive treatment– the memory arts authors do not highlight the components different workings. The kinds of memory that are individuated in the manuals, following Aristotle, are *memoria* and *reminiscentia*: the first is spontaneous memory, the second is characterized by intentional retrieval. Rather than distinguishing short- and long-term, the manuals focus on retrievable (thus long-term) memory only, and on the modality of retrieval.

Key to the practices was then their ability to turn contingent situation into material worth storing into long-term memory, be it implicit or explicit. Awareness and intentionality are thus central for early modern formulations as well; however, our contemporary analysis attributes the difference to an inner quality of the memory itself, to the point of individuating different brain areas for each type. Renaissance authors instead intend intentionality and awareness more broadly: they see them not just as the consequence, but also as the cause, the origin, of differences in memory types. *Loci* and *imagines* thus need to be both *reminiscentiae*, i.e. mental images that one can recall at will.

Hence, an episode that happened to me yesterday can classify as *memoria* if it presents itself to me unsolicited; whereas it will be *reminiscentia*

²¹ For a more complete, yet approachable, exposition of explicit and implicit memory, see KIHLSSTROM, DORFMAN, PARK, “Implicit and Explicit Memory and Learning”: VELMANS, SCHNEIDER (eds) *The Blackwell Companion to Consciousness* (2007).

²² “Although it has been well established that there are numerous critical distinctions between explicit and implicit memory at both behavioral and neural levels, recent research has also identified several ways in which these memory phenomena may be interrelated.” DEW & CABEZA (2011) 185.

if I have to make an effort to remember it. Even if the practices memory arts authors suggest for each are different, however, in explicit formulations they did not seem to think of them as distinct entities:

Because we know that not only our intellect can take up habits, but also the hand, and the tongue: the first one for writing, the second for reciting; and that when we learn twenty, or thirty verses and we get used to reciting them for many days, the tongue gets used to it, so that it recites without thinking and without paying attention, line after line impeccably flowing. GESUALDO 10v

This description parallels intellectual and physical habits as equally valid toward knowledge; moreover, it characterizes this type of knowledge as coming “without thinking and without paying attention” (*senza pensarci o darci mente*), and also “flowing”. These are traits typical of implicit memory, which relies on unconscious mechanisms. Indeed, memory arts authors attribute especially *loci*-pertaining memory to automatism, that is, to a very low level (if any) of consciousness. They also insist that such automatisms can be acquired and consolidated on purpose, and explain this phenomenon through Aristotle’s habituation, or *hexis*²³. This specific operation allows the acquisition of a “flowing” kind of knowledge, which does not require effort, thus cognitive focus, to be recalled. The *loci*, which keep order and connection among the memorized information, are therefore almost transparent to attention. On the other hand, the memory of the content, the *imagines agentes*, is kept as conscious as possible by making it attention-grabbing and emotionally charged, following another Aristotelian principle: *thaumathein*, or wonder, the kind of inquisitional curiosity that gives birth to philosophy. *Hexis* and *thauma-thein* constitute a theorization of different cognitive mechanisms, one expressing the human ability to acquire habits on purpose, and the other regarding the capacity to direct attention and create meaning. Such a coordination between these two principles allows the memorizer to place all their conscious cognitive effort on the *imagines agentes*, while still maintaining the right order among them through the unconscious.

While memory arts’ authors do not quote them explicitly, *hexis* and *thaumathein* represented an accepted and common way in which Renaissance

²³ See LOCKWOOD, “Habituation, Habit, and Character in Aristotle’s Nichomachean Ethics” (19-36, esp. 21): SPARROW, HUTCHINSON (2013).

people thought about the human mind²⁴. Not only do they often refer to Aristotle for their theorization of memory, but they also apply the principles of his theory of the soul in their proposed techniques. Importantly, Aristotle insists on the possibility to acquire virtue for personal and communal betterment: it is possible, in his system, to change human behaviors and natural predisposition. To do that, it is however necessary to elaborate a good technique, able to work with the limitations and potentialities of human organisms. The memory arts represent samples of these techniques, forged on the presuppose that humans can know themselves well enough to overcome their instinctual limits through training. Interestingly, such a training often involves the body; in the following sections, such involvement will be explored and analyzed in detail.

Habituation: Pushing into the unconscious

In the memory palace, the most visible exploitation of the intentional habituation principle (*hexis*) is the structuring of the palace, the *loci* system. Like paper for the ink, *loci* are the basis onto which *imagines agentes* are placed. The *loci* thus need to be arranged to be almost transparent to consciousness, which translates into a system of automatisms. All automatisms are picked up through repeated exposure to a stimulus, always accompanied by a precise response to it. Once learned, the choice to react to that stimulus with the selected response does not require a conscious decision, resulting in both faster and easier procedures. The response is interiorized and re-enacted through repeated interaction with one's lived, bodily context, so much so that it can be referred to as "muscle-memory"²⁵. This kind of unconscious, embodied relationship constitutes the core of the type of memory regulating the actions we know how to perform in everyday life (tying shoes) as well as complex patterns of movement (playing bas-

²⁴ BLUM & BLUM's excursus on wonder in early modern philosophy goes beyond the Aristotelian definition according to which philosophy originates in wonder (in the second chapter, first book of the *Metaphysics*), including a long analysis of the Platonic tradition. See also DECKARD, LOSONCZI (2010) 1-42.

²⁵ "These embodied memories derive from many repeated experiences rather than one. There is no single, specific past event which causes my current activity, [...] nor do I need be aware at all of any previous performances or of the historical source of my know-how." SUTTON & WILLIAMSON: SHAPIRO (2014) 320.

ketball). While today we would call this procedural memory, Renaissance thinkers knew these as processes of habituation. In the palace, this specific goal is attained through multiple means: beyond repetition, which is common to all memorization practices, we will here focus on the two most comprehensive and important ones, namely: perceptual ease, and direct experience. Both are based on sensory perception, thus substantially relying on embodiment.

The first way in which *loci*-images work towards habituation is by being as suitable to easy repetition as possible; meaning, that their perception should be as seamless and inviting as it can be. As seen in the quotes below, the authors, following a long tradition, tend to recommend choosing well-lit places, big enough to host the figures of the *imagines agentes*, so that these can fit like in a frame.

A dark place is not right for this art, because it buries, covers, and blinds the image. Conversely, an image in an open space becomes too bright for the eye, because of the excess light, and the eye itself is darkened when looking at it, unable to contemplate it clearly and comfortably. Similarly, the mind cannot effectively grasp, nor memory can show, an image upon which an excessive light is cast. GESUALDO 16v.

About quantity and size [of the memory images], they must not be small (like we said for the loci), because small things do not move and cannot be seen well or at all (the same way points, atoms, and such things do; since they are so small, that they barely move the senses). And similarly, they will not move fantasia enough. DOLCE 89.

Loci are also provided with signposts that help segment the scenes, so that they can be subdivided into smaller units (*loci particulares*) and considered one at a time, which is much less burdensome to cognition. To make them even less taxing, the stimuli provided by the *loci* are selected and controlled: interference is limited to the minimum by keeping *loci* at a distance from each other, and by involving only some of the senses to avoid overwhelm. In other words, the memorizer, in building their palace, should utilize their mind's eye (and ear, nose, and hand) with maximum ease. In the palace, they should be able to reach, smell, hear, and see the images without making efforts, or having to choose which stimulus to focus on. As Gesualdo indicates, while designing *loci particulares*, if two of them are close "Make them face each other: so that standing in the middle, you can see both of them without turning you head [lit. "your eyes"] around too much" (28v).

Another very common way that the palace quickly and effectively produces habituation is by relying on what is already embedded in the me-

morizer's unconscious memory. Applying a sort of shortcut to avoid the work of fabricating and internalizing the *loci*, Renaissance authors often recommend using places that are already familiar to the memorizer.

Above all, try to have images from things that are known to you, as familiar as possible. Thus, if you have images from real things, stay away from using fabricated ones; and if you have images from things you know, stay away from the unknown ones. GESUALDO 48r

This way, the habituation has already taken place for what regards the distribution of space within the *loci* and their general characteristics like signposts, colors, orientation, type of material, etc. However, their choice and re-semanticization as memory devices needs to be carefully tailored. Not every place can be used for *loci*: there are some characteristics listed as necessary, like the possibility to subdivide the place into recognizable *loci particulares*. Moreover, each of these sections should be made salient in some way, usually by signposting: if they do not contain a signpost (like a column, a window, or a piece of furniture) the memorizer should be able to imagine one:

If while establishing this variety I encounter uninterrupted or identical walls, steps, or columns that cannot be differentiated, it is necessary to imagine tables, beds, shelves, chests, and similar household fittings, which are often along the walls of chambers. DELLA PORTA 93 (Italian: 64)

Experience-derived *loci* are not the only prospect, however. All authors admit the possibility of utilizing imaginary places. These can include book-derived ones, familiar to the common reader, but not through their direct sensory experience –like Dolce's suggestion to use Dante's cosmology²⁶. They also include *loci* entirely fabricated in one's mind, like Schenkel's, who even recommends tailoring them to one's content. However, the value of first-person involvement remains overriding for these Italian authors, as specified by Gesualdo again:

Because this level of our Memory is originally formed through the Senses: thus, it is necessary that the Loci Formator [the memorizer] avoids choosing places as Loci if

²⁶ A similar tendency can be registered for the composition of visual scenes codified with a specific meaning; a private activity akin to that of forming *imagines agentes*, which thanks to the printing press become more standardized, see BOLZONI, VOLTERRANI (2004) 11-12 and BOLZONI (2001) 179-187.

he hasn't seen those place more than once, touched them again and again with his eye and hand (14r&v).

Wonder: pulling toward the conscious

Against this automatized background, *imagines agentes* stand out sharply. However, a strong presence is not enough to guarantee their memorization. Other elements are engineered in the palace to make *imagines* memorable, as we can see here:

If I want to remember the word 'lover,' I will not imagine the person of that place well-dressed and in the act of sighing and doing other similar things suitable to an enamored gentleman, but I will depict him just like Ovid describes the enamored Polyphemus: shaving his beard with a sickle, combing his hair with a rake, mirroring himself in the water, playing a strange musical instrument and singing. Since the image is so ridiculous, it will trigger recollection in the memory with greater ease. DELLA PORTA 104 (Italian: 79)

Most memory arts manuals agree that “When we meet something absolutely horrible or beautiful, exceedingly dishonest or honest, incredible, huge or ridiculous, that is what we easily remember.” (DOLCE, 92). In accord with this general rule, instructions on how to choose and build *imagines* utilize various appeals to relevance, most of which involve the memorizer’s embodied, personal experience: familiarity, dynamism, sensory stimuli, bizarreness, morbidity, etc.²⁷ The common trait between these approaches lies in the reaction they elicit, which is characterized by a regulated movement (physical or figurative) of “moving”, “going towards”. Relevance and attention are closely tied together²⁸, and it is a specific type of attention that the *imagines* need to elicit: the puzzlement leading to a curiosity to understand, *thaumathein*. In the embodied dynamics of the palace, the grabbing of attention is not just a

²⁷ For a complete list, see the rest of page 104 in DELLA PORTA, and following.

²⁸ According to Spivey and Huette in SHAPIRO (2014) 306-314, attention is an embodied phenomenon in the perception-action loop: this means that what is important for action is perceived differently. The making-physical of the palace is also making-actionable, engaging the action-ready body and therefore, stimulating attention. In order to model this even more explicitly, memory authors recommend that *imagines* model action: “It is better to imagine inanimate things as instruments, since it is needed that someone moves and works with them”. DOLCE 104.

metaphor, it is a proper physical action²⁹. In other words, the *imagines* need to literally move us, in order to work; and the movement that is needed to start a fruitful relationship with the scene, is one of wanting to go closer and examine it. At the same time, the memorizer needs to maintain a certain detachment to be able to view and understand the scene without becoming embedded in it, or without coming so close as to distort it. *Imagines* are thus meant to be seen at a certain distance, which is, again, a physical rendering of a “mental” attitude – detachment.

But how is this double reaction to the image (going-towards, looking from a distance) ensured in the palace? The precise selection of the emotions and actions involved is performed through an artful use of cognitive mechanisms. The most important “moving”, yet reassuring stimuli, are those characterized by weirdness (“The weirder and clumsier they are, the better they will move us. Like that guy who used the image of a roasted pig [*Arrosto*] to mean Ariosto.” Gesualdo 39r) and familiarity (“We should try ... to use images of people that we know very well and are well-known, because those move us more effectively” 35r).

This desired “moving” is not explained theoretically, but we can still derive its main characteristics through the text. Usually, its necessity is justified via direct experience: “We naturally notice that we remember novel things with great pleasure” writes Della Porta at the beginning of a list of empirical observations on the nature of human memory (103). Crude details like Della Porta’s headless geese are not thus uncommon, in the memory arts; as the author explains, “Horrible and frightful things also trigger memory, because the dreadfulness of what happens leaves our spirits battered and suspended for some time” (103). However, he also states:

We also remember the things that we like. And even against our will, memory represents them to our mind; whereas not only do we not remember the things we

²⁹ In “Memory and Action”, Dijkstra and Zwaan explain experimental data as follows: “Memory is embodied in the sense that it interacts with action systems and shares a common neural basis with action.”: SHAPIRO (2014) 301.

dislike, but we abhor them even with our thoughts, and we flee their memory as much as we can with our imagination. (103, Italian: 79)³⁰

Therefore, while horrific things are fine to use, dislikable things are not. This distinction sheds some light on the way of the palace to regulate emotions to memory's advantage. In multiple instances of these manuals, we witness gruesome scenes: however, they rarely regard the same *imagines* that express affection and familiarity, instead they are mostly applied to inanimate objects, animals, and mythical figures. Indeed, while fear and disgust can be surprising and elicit curiosity, they cannot do so if they turn into anguish and distress, because such sentiments (similarly to intoxication and love) linger, hindering memory and incapacitating the intellect. Since the palace must be navigated multiple times to be fixated and reused, the images should encourage the memorizer to come back. Hence, negative, lingering emotions like sadness need to be avoided; to perform the pull-in motion, positive, playful stimuli are favored, followed by perplexing, upsetting, confusing ones that stimulate *thaumathein*.

The distancing movement instead is visible in other aspects of the *imagines agentes*: the overall absence of noises or smells, which is counter-intuitive, especially since the stories behind the *imagines* are full of these sensory stimuli. These are at times utilized during the construction of the palace, as seen in Gesualdo's passage quoted above, where he encourages readers to interact very physically with the *imagines*: "Greet them, touch them, call them by name, talk with them, observe them again and again, frontally and from the sides" (23r). However, when roaming the palace, the memorizer is supposed to keep their distance, stand by the rooms' doors, and limit the physical interaction to looking around with minimal movements. Just like with repulsion and attention, the cognitive action of focusing becomes embodied in the palace.

If we understand the *imagines* as devices of emotion-production, we should also keep in mind that this is a controlled production: the memorizer needs to be stimulated just enough to dedicate intense attention, and not too much, loosing themselves in an *imago*. The fruition of the palace is thus not an

³⁰ A special note should be dedicated to fear, which is kind of an exception to the negative rule because of its effectiveness in producing recall, but whose uncontrollable effects seem to make most author shy away from its use.

algid, intellectual process, but rather a tranquillized emotional rollercoaster in which the senses are constantly stimulated and calmed down. The memorizer's body, even though always imaginary, is constantly pulled towards the images, and constantly calmed into a detached pose; all this is regulated through sensory stimuli. Thus, the memorizer can go through rather shocking scenes, as long as they are not too close: metaphorically, through affection; but also literally, through physical proximity, as they should be witnessed "without turning one's eyes around too much", in Gesualdo's words (28v). Once again, the palace translates concepts into the physical, embodied, dimension.

Conclusions

Analyzing Renaissance memorization in its own terms means not only evaluating the theory it presents, but also the practices. In doing so, it becomes evident that early modern knowledge of the mechanisms of human cognition was profound and articulated. The memory palace, an incredibly sophisticated device, was able to fabricate long-term memories with different characteristics, so that they could work together towards a common scope, that of remembering complex datasets in both content and inner organization. In this essay, such device was analyzed in its functioning through Renaissance concepts like *hexis* and *thaumathein*, but also through contemporary concepts like implicit and explicit, long-and short-term memory. These different lenses allow us to focus on various elements of the palace, one by one but especially in combination. The comparison and interaction between early modern and today's beliefs is fruitful in that they highlight each other's dark spots.

Renaissance concepts in fact focus on human agency: even though there is much of our behavior that is not under our control, early modern authors are inclined to think that it should be. Better yet, that even the deepest automatism and instincts can be regulated through specific techniques. This cursory overview showed how effectively memories were artfully fabricated through processes of habituation and wonder-eliciting in the memory palace. Not only the awareness of unconscious mechanisms, but also the ability to redirect them to one's advantage, is remarkable as it emerges from this Renaissance practical knowledge. Moreover, the productive permeability of the boundary between conscious and unconscious learning in Renaissance

thought, challenges our current theory, which is struggling around their neat distinction. The memory arts thus constitute an example of the practical uses and consequences possible when overcoming such strict distinctions. Our current approach, much more descriptive than prescriptive, could benefit from recognizing its premodern roots, and with them, a focus on the research of the “good life” beyond disciplinary distinction.

Conversely, today’s rigid divisions shed light on the functioning of the memory palace, and on the unformulated theory that early modern authors utilized. Even though Renaissance thinkers did distinguish between *memoria* and *reminiscentia*, they did not theoretically separate elements of habituation from those of wonder. They treated them in different parts of the manuals, but they did not, for example, give different names to the mechanisms of memorization for *loci* and *imagines*. The remarkable embodied character of the techniques employed, and their strategic use, appear more clearly when analyzed through contemporary lenses, which tend to separate embodied from mental work. In turn, the strong presence of the body as a cognitive tool, be it as a source of sensations, or more generally of first-person, physically lived experiences, constitutes a challenge for today’s sciences. Tracing the history of this idea to the Italian Renaissance could help effectively integrate it into the narrative of Western culture.

Finally, this instance in particular would facilitate the formation of an interdisciplinary common ground between Humanities and Cognitive Sciences, as well as with generally quantitative explorations of the human nature. The memory manuals’ goals were eminently humanistic, but their methods gesture towards an empiricism that philosophy could hardly sustain yet, but whose expression this backseat genre could risk. This exploration thus contrasts the stereotypical division between rhetorical, authority-bowing Humanities and emerging, experimental Sciences at the dawn of modernity. Methodological proximity and possible shared goals can be recognized at the origin of Western scientific endeavors: among these, an investment in embodied practices and the exploration of their working. Hence, not only do we find in these texts an early modern awareness that embodied, individual experiences are central for processes of knowledge-formation; but we also gain a collaborative perspective for a critique of our current beliefs regarding such processes.

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Resumo: As técnicas renascentistas de memorização utilizam o corpo, de forma intencional e precisa, para melhorar a memorização. A análise de três manuais de memória italianos do final de 1500 destaca uma impressionante perícia das possibilidades únicas oferecidas por uma aquisição corporificada de conhecimento. Alguns conceitos da atual teoria cognitiva ajudarão a avaliar a eficácia e a complexidade de tais técnicas. Essa reflexão interdisciplinar contribui para o delineamento de uma concepção pré-cartesiana da cognição humana.

Palavras-chave: Memória; memorização; cognição; início da era moderna; hábito; maravilha.

Resumen: Las técnicas renacentistas de memorización utilizan el cuerpo, de forma intencionada y precisa, para potenciar la memorización. El análisis de tres manuales de memoria italianos de finales del siglo XVI pone de manifiesto una impresionante experiencia de las posibilidades únicas que ofrece la adquisición corporizada de conocimientos. Algunos conceptos de la teoría cognitiva actual ayudarán a evaluar la eficacia y la complejidad de dichas técnicas. Esta reflexión interdisciplinaria contribuye a delinear una concepción pre-cartesiana de la cognición humana.

Palabras clave: Memoria; memorización; cognición; edad moderna temprana; hábito; maravilla.

Résumé : Les techniques de mémorisation de la Renaissance utilisent le corps, de manière intentionnelle et précise, pour améliorer la mémorisation. L'analyse de trois manuels de mémoire italiens datant de la fin du XVIe siècle met en évidence une expertise impressionnante des possibilités uniques offertes par une acquisition corporelle des connaissances. Quelques concepts issus de la théorie cognitive actuelle permettront d'apprécier l'efficacité et la complexité de ces techniques. Cette réflexion interdisciplinaire contribue à la délimitation d'une conception pré-cartésienne de la cognition humaine.

Mots-clés : Mémoire ; mémorisation ; cognition ; début des temps modernes ; habitude ; émerveillement.