

Memory and Memorisation for Musicians

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What is so significant about memory?

- ▶ Obvious: many performers play from memory. Memory performance is seen as providing more immediate connection with the music and the performance. Allows for more creative freedom
- ▶ There is research that suggests that memory in music enhances sight reading and improvisation capacity (and vice versa) (Lehmann et al, 109)
- ▶ On a more general level: Memory is at the basis of artistic activity and all thinking (Classical view: *Mnemosyne* is the mother of the nine muses. Plato's view that memory plays a role in our capacity to know and understand the world (*Theaetetus*) - > wax analogy. Memory opens the world for us. Provides us with interpretative possibilities, even dreams, etc. -> coherence of identity and world
- ▶ The many dimensions of memory become visible: Memory refers as much to information or procedural recall as it does to interpretation and action in the world. Fundamental to identity.
- ▶ We often complain about our memory. We also know we cannot "force" to remember, although we can exert our concentration to remember. But we know that our memory is better sometimes when we use strategies (->mnemonic devices)

The various dimensions of memory in musical performance and interpretation

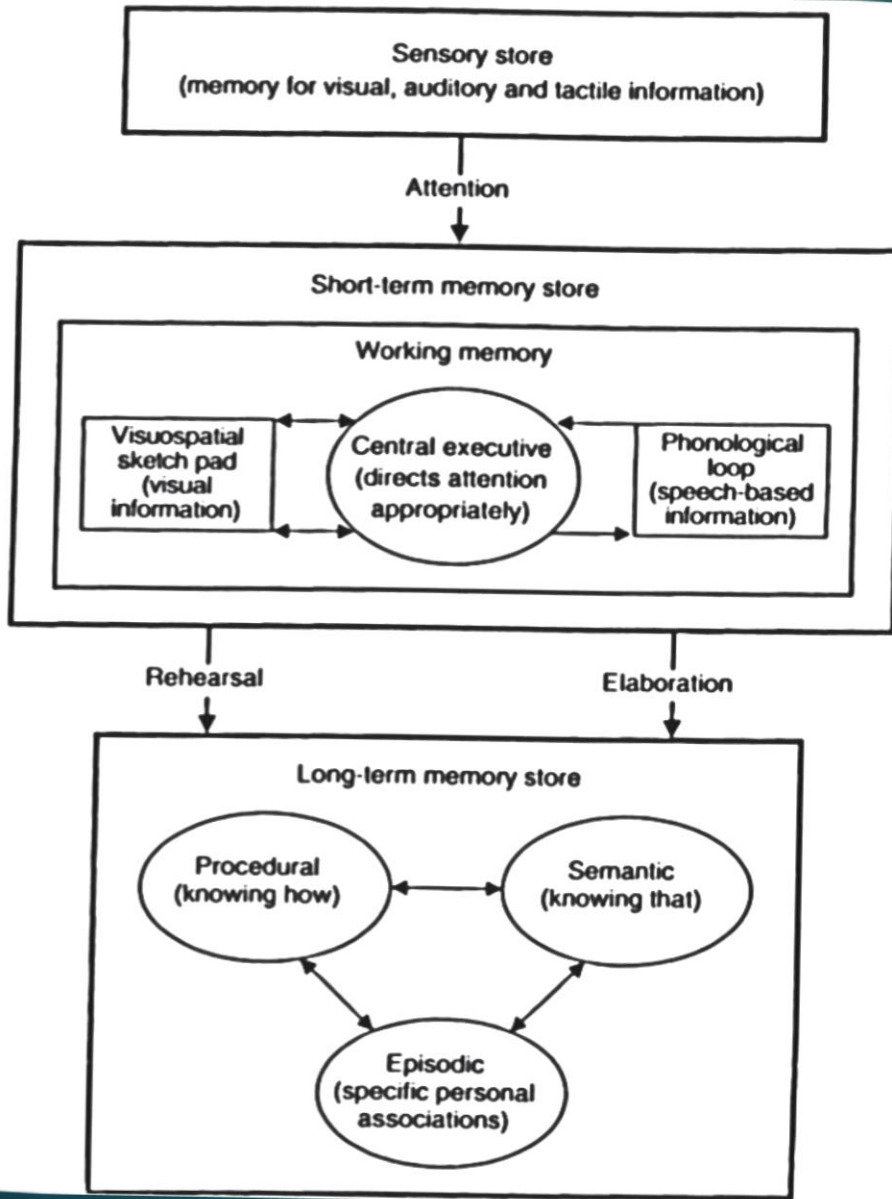
- ▶ memory as retention and protention -> temporal unity of melody and perception of unity. Connection between memory and intentionality. (Husserl – Phenomenology of internal time consciousness). Anticipation and retention provide unity of temporal experience
- ▶ memory in the recollection of musical structures. Harmonic, rhythmic and melodic units. (motifs, subjects, phrases, etc... musical syntax)
- ▶ memory in the creation interpretative and expressive structures -> The musical work relies on memory to exist (intentionality and form)

Playing from memory.... Downsides

- ▶ Obviously memory increases risk of performance. If there is a memory lapse the consequences for the performance may be more significant than just a mere “mistake”. Consequently, some performers (Rubinstein) ceased performance because of memory issues.
- ▶ Even on a short term, immediate perceptual level, memory can restrict our ability to constitute meaningful interpretation by restricting our protention through retention. (Restriction of our imagination...) (flawed conditioning, perverted kinesthesia, etc)

Memory and how it might work...

- ▶ Memory can be studied from many different aspects... obviously empirically, but also introspectively -> that is, observing the way in ourselves how our memory works. Modal Model of Memory (Atkinson & Shifrin. 1968):
- ▶ **Environment -> Sensory Memory -> Short Term Memory -> Long Term Memory**
- ▶ **Iconic, Echoic memory** (short, episodic storage of visual or acoustic information).
- ▶ **Short term and working memory** (-> retention while performing complex tasks).
- ▶ **Long term memory**: stores information and processes over long periods of time
- ▶ In musical performance -> working towards long-term memory and retrieval into working memory.



Implicit/ non-declarative retrieval: retrieval through performance rather than explicit conscious recall or recognition

Explicit/ declarative retrieval: intentional retrieval - episodic memory or facts. Recall is limited in extent...

Attention and Rehearsal (Visuospatial Sketchpad – visual information; phonological loop- speech/acoustic information)

(illustration from: Williamon, 2004)

Recall limits

- ▶ 9754
- ▶ 3825
- ▶ 6514
- ▶ 94318
- ▶ 68259
- ▶ 38147
- ▶ 913825
- ▶ 648371
- ▶ 596382
- ▶ 7958423
- ▶ 6734598
- ▶ 2304675
- ▶ 87345124
- ▶ 98456712
- ▶ 764306789
- ▶ 984657923

Recall

- ▶ CTAIILTCSFRO
- ▶ FRACTOLISTIC
- ▶ HIAEVAREYVGABDYMEORM
- ▶ I Have a very bad memory

Organisation of “information”

- ▶ Chunking: eg. 752-365-987, with the help of retrieval cues, chunking can be extended
- ▶ Chaining: Each item associated with the next A-> B -> C -> D etc. Each member of the chain cues the next. (Break down can be catastrophic... eg. rote memory in music that relies on “muscle memory” is not sufficient ->)
- ▶ Context: Item linked to a changing context (temporally based) which then acts as a recall cue. Contexts are derived through different modalities (eg. structural, or visual-> cues into kinaesthetic sequence.) Chaffin et al (2002)
- ▶ Primacy: Item receives activation of various intensity (Hierarchy of emphasis)

Modalities of memory

- ▶ Modalities of memory: Visual/spatial, tactical/ kinesthetic, aural. Conceptual, Meta-memory -> Memory organising (Chunking, chaining, context, primacy/hierarchy) is applicable to all modalities. (-> importance of rhythm in movement)
- ▶ Modalities involve temporal organisation in various ways -> “motor memory” (autonomous) distinct from conceptual memory. Hierarchic structures where conceptual memory provides cues. Modalities provide various cues.
- ▶ Working memory is dependent on attention. Building structures and retrieval cues. In music such cues can come from basic technical level, to conceptual, to interpretative/ artistic. Retrieval cues reflect mental/ artistic map (similarity, switches, etc) -> analysis. Chaffin et al (2002) see memorization as a process of linking motor automatism with conscious retrieval cues.

The role of retrieval cues in musical performance

- ▶ Motor memory – patterning, chunking, etc (rhythmic organisation)
- ▶ Context and Primacy (sensory memory -> melodies, harmonies, phrasing, emphasis)
- ▶ Conceptual memory: structural organisation. Expert memory (Chaffin et al) is distinguished by higher level of conceptual cueing “It’s the experts ability to recognise familiar patterns... that sets him or her apart from the less skilled” (201/2) Conceptual memory helps in the organisation of “switches” (similar or identical music that leads into different sections). Organisation of section boundary form)
- ▶ Expressive memory: metaphorical cue (“character”, expression or emotion).

Which cues are best and what does this mean?

- ▶ Chaffin et al show that “recall of bars containing expressive performance cues was better than other bars whereas bars containing basic performance cues were worse” (213)
- ▶ Basic performance cues only direct the musician to the particular without necessarily establishing wider context (ongoing intentionality) “Basic performance cues are only used to ensure accurate execution of acritical movement, such as the placement of a particular finger or the trajectory of a hand. In these cases, the pianist learns to monitor the motor response with the result that other features receive less attention. The pianist concentrates on the basic cue and so cannot pay attention to the rest, resulting in poorer recall. The basic performance cue reminds the pianist where to place a finger or how to move an arm, but not what the rest of the notes are. Attention to expressive cues in contrast does not come at the expense of other features. Rather, expressive cues include the other features.” (214)
- ▶ Expressive Cues represent a next level of retrieval
- ▶ Meshing basic performance cues, (auditory, tactile memory) with interpretative and expressive cues -> phrasing
- ▶ Achieved by “concentration” (attention and association)
- ▶ Re-chunking as a result of attention to interpretative/ expressive cues

Three Principles of Expert Memory

- ▶ Declarative – conceptual memory: “new information is encoded in terms of previously established chunks” (Chaffin, 233)
- ▶ “Retrieval Scheme must be used to allow controlled access to information stored in long term memory” (motor memory, etc)
- ▶ “Extended practice is necessary for retrieval scheme to work fast enough”...
- ▶ Re-chunking as a result of final stages of polishing.

Methods

- ▶ “It is essential, therefore, before beginning with the practice of the piece, to visualize the same, whereupon, if this has been done thoroughly, we shall be able to play it correctly from memory” (Karl Leimer, 11)
- ▶ “Visualisation” -> structural organisation. Mental practice. (full visualisation of all modalities of playing) -> anticipation
- ▶ Blended practice: silent/ sounding.
- ▶ Distributed Practice -> more frequent, shorter learning sessions. Deliberate start- and finish times. Renewal of attention. Arresting frustration patterns.
- ▶ Kinaesthetic/ tactile organisation. -> “motor memory”. Importance of relaxation.
- ▶ Conscious and active relaxation: “In order to attain a natural manner of playing... it is of the utmost importance to learn to exert the muscles consciously, and, what is of still greater importance, to relax them consciously. My manner of accomplishing this differs from that of many other pedagogues. I contrive to raise a feeling of relaxation from within, as it were (Leimer, 12)...We must think ceaselessly of relaxation.” (Leimer, 54)
- ▶ Why: -> the role of the amygdala. Fear, flight or fight response undermines memory.
- ▶ Coordination practice. (rhythmic)
- ▶ Slow practice: organisation of retrieval cues.

Illustration

Measures 35-50 of the musical score. The score is in G major and 2/4 time. It features a vocal line and a piano accompaniment. The piano part includes chords and a rhythmic bass line. Dynamics include *fp*, *f*, *dim.*, and *p*. The tempo is marked *Andante*. Measure numbers 35, 40, 45, and 50 are indicated.

Measures 55-65 of the musical score. The score continues in G major and 2/4 time. The piano accompaniment features a more active bass line with eighth notes. Dynamics include *f*, *p*, *f*, *p*, and *p grazioso*. The tempo is marked *Andante*. Measure numbers 55, 60, and 65 are indicated.

Reading

- ▶ Giesecking, Walter; Leimer, Karl (1972). *Piano Technique*. New York: Dover.
- ▶ Lehmann, Andreas, Sloboda, John, Woody, Robert (2007). *Psychology for Musicians - Understanding and Acquiring the Skills*. Oxford: Oxford University Press.
- ▶ Williamon, Aaron (2004). *Musical Excellence. Strategies and Techniques to enhance performance*. Oxford: Oxford University Press.
- ▶ Chaffin, R, Imreh, G & Crawford, M (2002). *Practicing Perfection: Memory and Piano Performance*.