This is the draft Chapter 3 of my planned book, *The Chess Memory Palace*. Previous draft chapters can be found here:

- Chapter 1 (*Picture Notation, A Mnemonic System for Chess*) and the Appendix (*Picture Words for all 64 Squares*) at

  https://johnden.org/picturenotation

- Chapter 2 (*Essential Memory Techniques*) at

  https://johnden.org/papers/essentialmemorytechniques.pdf

- Chapter 7 (*Miscellanea*) at

  https://johnden.org/papers/tcmp_chapter7.pdf

Please ignore the broken references to other chapters. These will be fixed in the final version.

John Holden, July 2022

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Chapter 3: Memory Palace Architecture

> *Though for Mma Potsane the landscape, even if dimly glimpsed, was rich in associations. Her eyes squeezed almost shut, she peered out of the van, pointing out the place where they had found a stray donkey years before, and there, by that rock, that was where a cow had died for no apparent reason.*
>
> Alexander McCall Smith, *Tears of the Giraffe*

In Chapter **??** we learned to convert picture words to chess moves, given the memorised images. In Chapter **??** we learned to memorise images, given the palace structure and picture words. In this chapter we will learn to design the palace structure and choose the picture words, given the repertoire.*

This process starts by drawing out our repertoire as a tree diagram. We then choose a general setting, such as an airport or school, and map out the tree diagram onto the setting. Finally we populate the locations with picture words, so that they ready to memorise with the techniques of Chapter **??**. This process creates a branching map: as you mentally travel through the memory palace from location to location, you face a series of junctions where the path splits.

If this sounds strange, remember that you already use a branching map on a regular basis. When you leave your home to go to church, perhaps you turn right. When you leave your home to go to the doctor, perhaps you turn left up the road, then turn left again to the hospital. When you

*I will not cover how to create a repertoire. Refer to any opening book.

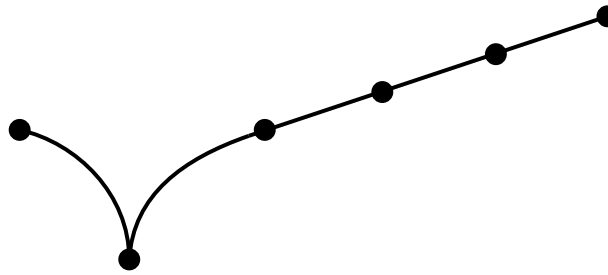


Figure 1: Basic tree diagram (start at the bottom); each dot is a move pair, the lines connect variations

go to the beach, perhaps you turn left up the road, then straight on to the motorway.

Don't worry if you don't follow everything at first. We will see two extended examples in Chapters **??** and **??**.

Drawing a tree diagram

Before you design your memory palace, you need to know what the shape of your repertoire looks like. So the first step is to draw out your repertoire as a **tree diagram**, with dots or boxes to show the move pairs, and lines to connect the move pairs into variations.

We already saw a small tree diagram in Figure **??**, but don't worry about labelling the move pairs (in algebraic or picture notation) just yet, and don't worry about making it neat. At this stage I usually draw the tree as as a series of dots and lines, like Figure 1. This is much easier by hand than on a computer.

In Chapter **??** I will cover transpositions and options for both colours. For now let's assume your repertoire has no transpositions, and you have only one prepared reply for your opponent's moves – in other words, you haven't prepared any options for yourself – so your repertoire is a simple tree.

Choosing a setting

Next, you need a **setting** for your memory palace. The setting is the general area where you will place your locations. In Chapter **??** we saw six locations in the setting of an aeroplane. In Chapter **??** we will extend this to 35 locations in the setting of an airport.

A good setting is a place you know well. You should be able to close your eyes and navigate around it, picking out tens if not hundreds of unique locations. It also needs to be complex enough to fit lots of branching paths. One long corridor will be fine for a forced sequence of moves, but won't be a great fit if you need to add variations.

Chapter **??** uses the setting of an urban transit line. Other obvious settings are your high school, college, neighbourhood, nearby village, workplace, and so on. I like to use settings from real life, but some people use settings from video games, or even invent settings from pure imagination. If you ever run out of settings, go and explore a new town, or play a new video game!

Settings can be large or small. The more familiar you are with a setting, the more precise each location within it can be, and so the more you locations you can fit inside. For example, if you are a gardener and have a keen knowledge of every plant in your garden, then each plant can be its own location in the setting of your garden. If your plants are arranged in a way that creates clear sequences of locations (and you don't change them too often), this would make a great memory palace. However, if you have only a vague sense of the plants in your garden or local park, then they are not distinct locations in your mind, so you will not be able to fit as many locations in the space. You can use larger features, such as "the flowerbed", "the pond", or "the bird bath" as locations instead.

Mapping the locations

You have a tree diagram, and you have a setting. It's time to put them together. This means creating **paths** through your setting: sequences of locations, with branches in the path to match the tree diagram. For example, if your tree diagram has a sequence of three move pairs before dividing into two options, then you can create a path through your memory

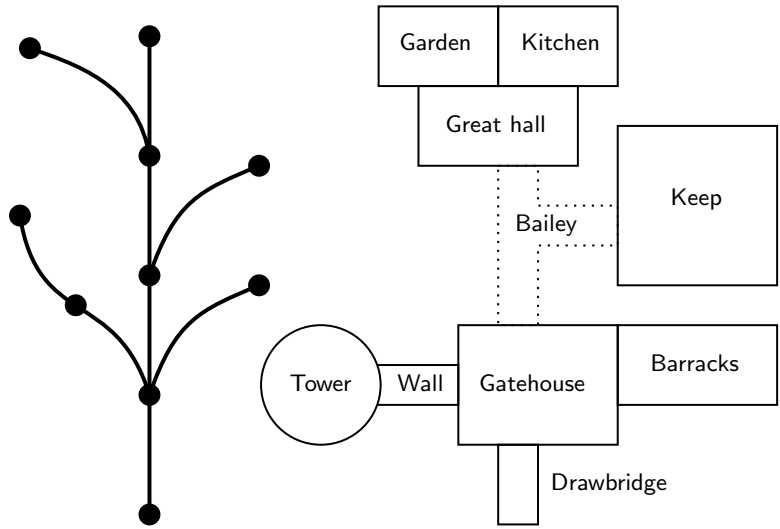


Figure 2: The Dream: A setting that perfectly matches the tree diagram

palace of three locations in a row, before you get to a natural junction where you split into two paths going in different directions.

Mapping locations is quite easy to do, but it is difficult to do *well*. If you want to memorise a burner repertoire for a single game this afternoon, then you don't need to worry too much: just create paths wherever convenient and get memorising. But if you want to memorise a repertoire for the long term, then it's worth doing this process carefully, to make your memory palace as intuitive as possible.

What do I mean? Ideally, your setting would perfectly match your tree diagram (like Figure 2). Your first location, the root of your tree, will be at at an obvious entrance to the setting, like the drawbridge of a castle. The second location will be in the gatehouse. Wherever your tree diagram branches, there will be a corresponding branch in your setting. After the second location, your tree diagram branches into three options, which conveniently matches three routes in your setting: left along the wall, forward into the courtyard, or right into the barracks...

Of course, it is very unlikely you can find a real life setting that fits your tree diagram perfectly. Sometimes you will need to create paths in

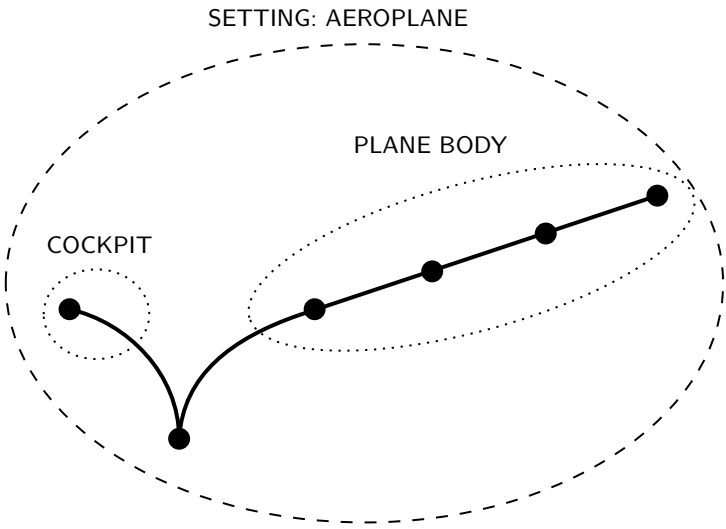


Figure 3: Interim stage: Tree diagram with some areas allocated. The dots (move pairs) will become locations; a sequence of locations is a path

strange places, like hugging the outside of a building, or digging through a wall to an imaginary tunnel beyond. But if you take care to consider the overall shape of the repertoire, you will be surprised how many "lucky coincidences" turn up to create a close fit. I find the best way is to start by allocating branches to different areas of my setting, then later going back to plot each location precisely. For example, when first mapping the Spanish Exchange Airport repertoire (Chapter **??**), I allocated the small branching segment to the aeroplane *in general*, as I was confident that I could fit six locations in a plane. Then later I went back and assigned each of the six move pairs to a precise location within the plane. Figure 3 shows an interim stage; we already saw Figure **??** which is a map of the locations, and Figure **??** which is the tree diagram labelled with locations and picture words, ready to memorise.

Keep your paths as intuitive as possible. Imagine you are playing this repertoire in a tournament game, one year from now. Will you still remember where the paths go? If they branch at obvious points, like a hallway, you should be okay. If they are convoluted and pass from the

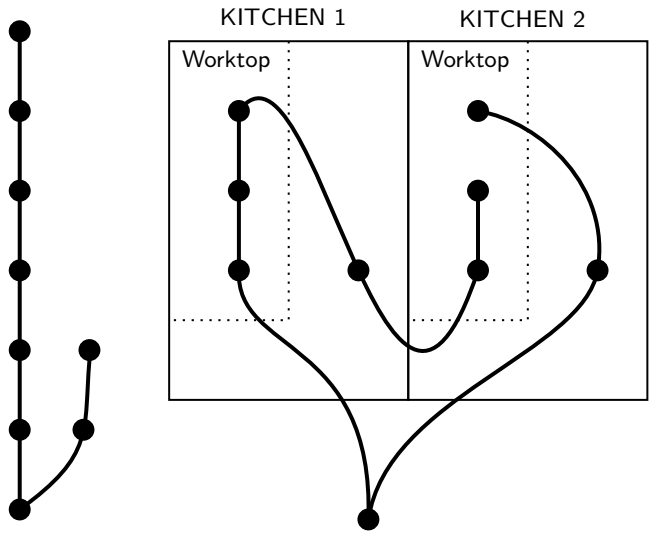


Figure 4: The Nightmare: Non-distinct locations, convoluted paths

door to the window and back to the door, you are in trouble. It is better to miss out a promising location than to backtrack. And never let your paths cross!

Remember also that you might want to add to your repertoire in future. Perhaps you will want to extend a variation for a few more moves, or add a new variation early on. This will be harder if your memory palace is cramped and already uses every last space.

Each location must be distinct. In my office, I have eight locations on the kitchen worktop: fridge, sink, water cooler, and so on. But I can't then walk up to the floor above and map eight more locations onto their kitchen worktop, because it looks exactly the same. When I think "office fridge", I want exactly one composite image to come to mind. If I try to store two composite images in two similar office fridges, then either the images will get mixed up, or one image will wipe out the other in my memory. (Figure 4 is an illustration of what *not* to do.) As you practise using memory palaces, you will get a feel for which locations you can distinguish, and which you will get confused.

Finally, my last tip is to not get stuck in analysis paralysis! The only way to learn is to start. You will have to make many arbitrary decisions about paths and locations. If you find one of your paths at a dead end, you can always float through walls, shrink yourself to a tiny size and explore ten mini locations on your desk, or create a wormhole to a completely different place. Just try to avoid doing this too much; your memorising and recall effort should be focused on your picture words, not the palace.

When you have finished mapping your tree diagram to your setting, try navigating around it. Can you follow your paths without confusion? Can you identify every location? Once you are happy with your empty memory palace, label your tree diagram with the names of every location, or write it out neatly from scratch, like Figures **??** and **??**.

Your memory palace is still a quiet and lonely place. Let's choose picture words to put in it.

Selecting picture words

Algebraic notation and picture notation have a one-to-many relationship. This means that in a chess position, a valid picture word will represent exactly one chess move, but one chess move can be represented by several picture words. Figure 5 shows a few examples. When you design your composite images at home, you need to decide which picture word to use.

Let's suppose you want to memorise a repertoire in the Bayonet Attack against the King's Indian Defence. You are learning the repertoire from White's perspective, so each picture word pair will show Black's move followed by your reply.

In the position below, Black's most common move is 13...h6.

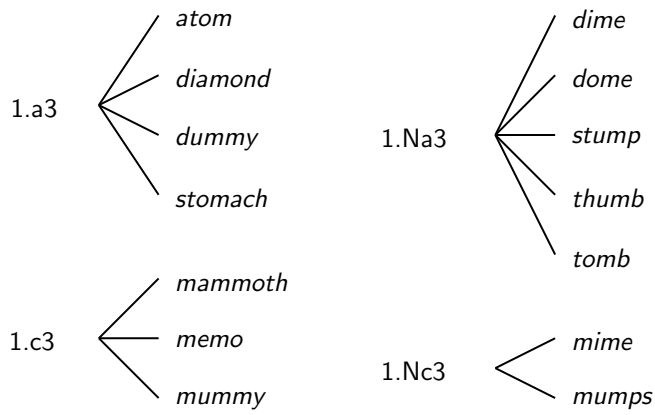
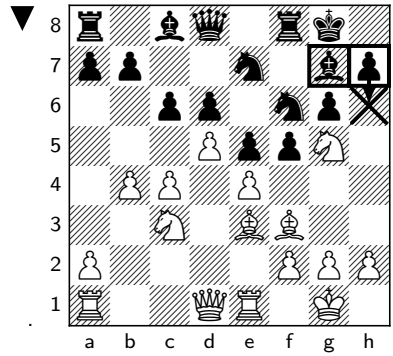


Figure 5: One-to-many relationship between algebraic and picture notation



13...h6 is a move to h6 by candidate piece II so, referring to the Appendix, your picture word options are (Bobby) *Fischer*, *fishcake*, or (Mount) *Fuji*. All three are valid picture words for 13...h6.

Using the techniques of Chapter **??**, you should be able to turn any of these into a memorable image. But which will be easiest? Choose a picture word that (a) is easy to imagine interacting with other picture words, and (b) already has strong associations for you.

Of the three options, *Fischer* is the most interactive. It is easy to

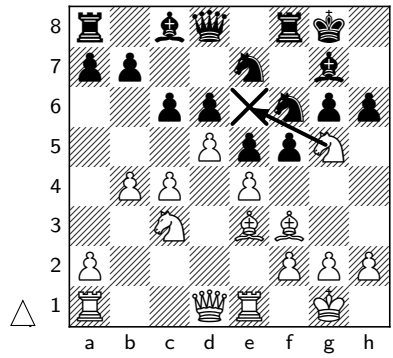
imagine him as the first (active) picture word in a pair, eating or kicking or hugging the second picture word. It is also easy to imagine him as the second (passive) picture word, reacting to whatever has happened.

However, I don't have strong associations with Fischer in my mind. (This might be different for you.) Although I have admired his games, I don't have a clear impression of what Fischer looked or sounded like. I could watch a video but, unless he was particularly distinctive or I have a continued interest, this is unlikely to help for long. So it will be hard for me to keep Fischer clear in my memory.

Fishcake is the opposite. I have strong associations because I have eaten many fishcakes, so I know how they look, taste, and smell. However a fishcake is not very interactive. It would be fine as the second (passive) picture word in a pair, letting out a gooey mess of fish and sauce as it gets eaten, but it is hard to imagine a fishcake taking action as the first picture word.

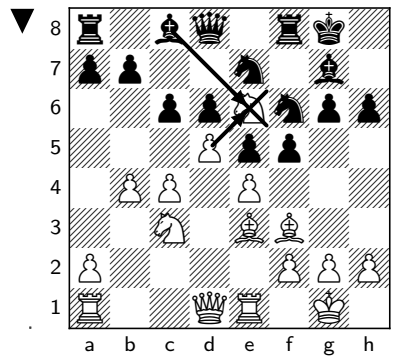
So for me, the best picture word is Mount *Fuji*. I have fairly strong associations with Mount Fuji, from the painting *The Great Wave off Kanagawa*, and once seeing its lower slopes from a hike. With a bit of imagination, it is not hard to visualise it taking action by erupting or causing an avalanche on someone. If it is the second picture word in a pair, I can imagine it letting out a puff of smoke as it gets hit (or otherwise affected) by the first picture word. I can also easily imagine it interacting with its location, for example if I had Mount Fuji in a yacht, I could imagine its slopes twisting and bending the wooden deck below, and its eruption burning the sails above.

Again, with enough creativity, I could use any of the three options as my two-syllable picture word for h6. But the question was, which is easiest? For me, the answer is *Fuji*. For you, the answer may be different. It depends which picture word you find most natural to animate, and it particularly depends on the associations you already have in your mind.



You plan to meet 13...h6 with 14.Ne6. Referring to the Appendix, the one-syllable options for e6 are *leech*, *bleach*, *sledge*,[†] and *slush*.

For me, *leech* is clearly the best of these picture words. I already have strong associations with leeches, from my natural reaction to the idea of leeches sucking blood, and reading about their historical use in medicine. And although I have never held a leech, I am familiar with slugs, which are similar. It is easy to imagine leeches interacting with other picture words, either actively – by sucking, of course – or passively – by being squished.



[†]Which some people pronounce *sled*, another reason not to recommend it.

The next two moves are 14...Bxe6 and 15.dxe6, which both take one-syllable picture words.

I have already chosen my one-syllable picture word for e6: *leech*. So I must stick to it! This picture word pair will be "a *leech* sucking another *leech*'s blood". Not pleasant, but memorable.

Don't be tempted to add variety and memorise this as "*bleach* pouring over *slush*" or suchlike. Be consistent with your choices. As you practise memorising your favourite picture words in different situations, you will grow familiar with them, like recurring characters in a play. You will learn how to visualise them in clearer and more exaggerated ways, which will make your memories more distinct. This will also make it faster to visualise your composite images at home and to decode the images back into chess moves at the board.

It is particularly tempting to change your picture word when the location in your memory palace fits one of the alternative options. If you were memorising this repertoire in a supermarket, and you came to the cleaning products aisle, it might be tempting to say "I normally visualise e6 as a *leech*, but here *bleach* fits better". This looks sensible but is actually a terrible mistake: as time passes, the bottle of bleach will fade into the background, and you won't be able to to recall it as a picture word.

Finally, as with locations, you should make sure your picture words are all distinctive. If you use a *leech* for e6, you should not use a *slug* for e7. They are too similar.

Again, this depends on your associations: if you are a herpetologist, it is fine to use both *frog* (h4) and *toad* (a1) in your memory palaces, but the rest of us should choose just one or the other. Personally, I use *frog* for h4 and *toast* for a1 – although *toad* is a more natural picture word than *toast*, the similarity with *frog* is too great. Whenever I saw a green, hopping amphibian in my memory palaces, I wouldn't know if I were looking at a frog or a toad.

The first time you convert a repertoire into picture notation, it will be quite time consuming to decide on your picture words. As you build more memory palaces, this will be quicker, because you will have made most of the choices already.

Memorising the palace

Now you have given every move pair a location and two picture words, just as Figure **??** requires. You are *almost* ready to begin memorising – but first it is wise to double check your paths and picture words against your repertoire. Memory techniques are so effective that if you memorise something in error, it is annoyingly difficult to forget it again. Then when you are satisfied, it is time to begin memorising!

You already know how to do this step, from Chapter **??**. Take each location in turn, introduce the two picture words, and make them interact with each other and the location in funny, grotesque, and dramatic ways. Have fun!

Notes

Chapter 3

1. "*Though for Mma Potsane*": Alexander McCall Smith (2006) Tears of the Giraffe. Abacus, chapter 9

2. *branching map*: Whereas chapter **??** drew on two millennia of literature on memorable images, and chapter **??** was inspired by the comparatively recent work on efficient data encoding, which has particularly focused on the memory competition disciplines of numbers and playing cards, there has been little development of techniques to memorise non-linear data structures. The tree shape of a chess opening repertoire is one such non-linear structure. Therefore if there are improvements to *The Chess Memory Palace* method in future, I would predict chapter will see the biggest developments. The two main approaches to memorising branching data structures are (1) mapping out a branching memory palace, as I advocate in chapter , or (2) borrowing computer science techniques to convert the data tree into a linear (or tabular) shape, then memorising it in a traditional linear memory palace. I haven't yet found a satisfying version of the second approach that matches branching memory palaces for flexibility, intuitiveness, and ease of amendments.

   The best discussion of memorising non-linear data structures can be found in Joe Reddington (2021) Advanced Memory Palaces.

3. *video games*: For example Nelson Dellis completed Super Mario 64 in an hour while using the game as a memory palace to memorise

1000 digits. Nelson Dellis (2020, December 26) I made a SUPER MARIO 64 memory palace [Video] YouTube

4. *large or small*: Aboriginal songlines, similar to a memory palace, essentially cover(ed) the whole of Australia. Meanwhile many indigenous peoples use handheld mnemonic devices, such as the lukasa of the Luba people in central Africa. Lynne Kelly (2019) Memory Craft, Allen & Unwin

5. *door to the window*: Incidentally, one piece of advice recommended since ancient times is to have a door or window every five or ten locations along your memory palace. This is excellent advice if you are designing a traditional linear memory palace, as it chunks your memories into digestible groups of five, and acts as a safety mechanism to alert you if you forget a location. However I have chosen not to advise this for a branching memory palace, for four reasons.

   First, it is less necessary for a chess memory palace: you are unlikely to completely forget about a location, because then your chess moves would almost always be impossible or nonsensical. In other words, the board position will alert you to any mistakes in your recollection of your palace, so you do not need this additional check of groups of five. Second, because of the branching nature of a repertoire, placing a window or door every five moves does not neatly chunk your locations into groups of five; depending on the repertoire this might force you to store many more than five locations inside a single "room". Third, the biggest challenge in creating a branching memory palace, compared to a traditional linear memory palace, is fitting the tree diagram to a setting. Requiring a window or door at regular intervals is an annoying additional constraint. Fourth (and less important), some positions can be reached by different numbers of moves, due to transpositions, so it is not possible to maintain the "every five locations" rule in a strict sense. For example the mainline Sicilian Sveshnikov can be reached by 1.e4 c5 2.Nf3 Nc6 3.d4 cxd4 4.Nxd4 Nf6 5.Nc3 e5 6.Ndb5 d6 7.Bg5, or by 5...e6 6.Ndb5 d6 7.Bf4 e5 8.Bg5.

6. *fade into the background*: The remarkable mnemonist Solomon Shereshevsky, active in Russia in the 1920s, rarely forgot anything;

his few mistakes came from oddities of perception when the object he was memorising merged with its background. "Now take the word *blimp*. That's something gray, so it blended in with the gray of the pavement[.] *Banner*, of course, means the Red Banner. But, you know, the building which houses the Moscow City Soviet of Workers' Deputies is also red, and since I'd put the banner close to one of the walls of the building I just walked on without seeing it." Alexander Luria (1968) The Mind of a Mnemonist (translated by Lynn Solotaroff). Basic Books, page 36

Shereshevsky was highly synesthetic, which made associations and the method of loci (memory palace) easy for him. If there is a key to a memory superpower, then it is not "photographic memory", but synesthesia. However having an extremely strong memory is not necessarily desirable. It can cause difficulties understanding text and making connections. "This is the importance of forgetting: sweeping aside irrelevant details in order to form concepts." Rodrigo Quian Quiroga (2017) The Forgetting Machine. Benbella Books, chapter 4