3-4: Visualization

Another tool to remember ideas better is to simply make them less abstract. So if you can make idea more vivid even if this is not connected to something in particular where it explores the deep structure the way metaphor works or the way the diagram works just even being able to visualize an idea to make a picture or mental picture on your head, even adding sounds or feelings, that can make an idea more memorable. So this is a good technique if you, also if metaphor if you could come up with a really good metaphor, or even if you come up with a really good metaphor using this technique on top that it could make it more vivid and does more memorable. So abstract ideas are hard to remember, concrete idea are better so if you could make an abstract idea more concrete you will remember it better.

The idea behind this visualization is simple, first what you wanted to do is, if you are not using this tactic, sooner you can skip this step if you fairly used to it, it doesn't have to do it every time but you can start by doing just a simple sketch or diagram of the idea. It isn't give you kind of a starting point, I find some time just mentally visualizing things for a lot of students and it's not most obvious first step so drawing something else just kind of roughly in the beginning can be a little bit easier than be making a mental picture. Start by just by just of sort sketching the ideas out. And once you have something very roughly sketch then you might want to move to just imagining your head and when you imagine your head you can obviously make it a little bit better, closer, artistic rendering and maybe you're the best visual artist and you have a good visualization in your head. Create the mental picture of the idea and then you want to add sound and color and emotion and you want to be adding lots of things to make it more vivid, even adding smell or touch another thing.

So the example of this when I was learning computer programming, a very common tool you have to use in computer programming is called the function. The function is basically set of code that you can execute which is the just little packet; you want to execute the code. And so one way I did this is you can create a metaphor for function. A function is a little bit like a pencil sharpener so just bear with me. A function is a contain little machine that does something and you input into it which will be unsharpened the pencil and the machine does something and it gives you out a return which is the sharpened pencil. So it's a little bit like, so that's a little bit metaphor for what the function is so that also something to do to visualize. We can visualize that; we can visualize what the function is doing so we don't just have to create this metaphor. We can also really imagine the machine of the function doing this. So we can imagine sticking the pencil in and imagining that just being the line of codes that's going to be the argument for. It is the pencil going to the machine. You can imagine the machine doing the work which is actually running the code of the

particular function. You can imagine returning the sharpened pencil which is the return value.

Now the pencil sharpener analogy works better as metaphor but you can extend this to be things you that aren't even real things. You can imagine a machine that is more complex or different in a way that you couldn't just describe using language, you couldn't maybe describe using a metaphor but you can describe it as this as a weird machine that has the multiple input points and it has different shapes for the different types of data that fondling into this visualization, it turns this into a big system which is similar to how the code works in the actual program and then spits on different value in the end. That is something very difficult for even me to describe but it might be something that you can visualize if you just have the certain to dream of like sense of the idea is. So as again start with the diagram then move to a point where you are describing the idea in the visual way in your head and then you wanted add sound and to another vividness to it. So as I said with the pencil sharpener, you just imagine the boring pencil sharpener or you can imagine this great machine doing all of these weird things and as colorful and as bright and making sounds and smells. In doing this, will allow you to make it that much more vivid. Making the idea more emotional, making it more colorful, making it more, larger, more gigantic, more outplace that vividness and that sort of imaginativeness will make the idea easier to remember.

As you can do this to a lot of idea so I remember when I was first learning how to do a2 by 2 determinatives. So this is also this is a linear algebra, a determinative is a very good examples of something which is very straight forward move which you often memorize. So it is you multiply the 2 things in this diagonal and you subtract from that multiplication of A and D, you subtract from that D and C going on this direction. And so you have 4 numbers, one here, one here, one here, one here multiple this 2 together and you subtract from that the multiplication of these 2 numbers together. So that's something very abstract, very boring and also sometimes hard to remember. So when I was first learning this for the first time, what I would do is I will use this visualization technique. Because I couldn't think of a good analogy at a time since then I learned better analogy for what term it does because I can't think of an analogy by that time, I just wanted to remember better by making it more vivid because it's very abstract. So by making it more vivid what I could do is could see, ok I can imagine myself moving my hands to the surface and by moving my hands thru the surface it was very hot so the heat was like an additive process for me while if I move it to this side then that was very cold, it was a subtractive process for me when I was smashing them together. Now that may seem a little bit of exaggerated but if you were to do this, you were to do this fully in your heads so you're not just hearing me talked about, if you were to do this in your head and you were to really think it thru really close your eyes, really

visualize and imagine it. You will remember its process much better that remembering rule on paper.

Now obviously, it was something like to determine as you practice it more on your actual studies. You probably just pick it up naturally, but using this visualization technique, you can imprint an idea in 1 repetition. So 1 time, the first time you have saw the idea you can imprint in your mind much, much more strongly that you could than just by skipping over it. And so I strongly recommend using this technique, using the, making it more vivid, more imaginative, adding sound, and adding color, adding temperature, adding this kind of features and idea. It takes a very abstract idea and makes it extremely vivid and as long as you are preserving the integrity of the idea. So you are not representing in it in a correct way. Then you will be able to understand the idea a bit better, but more important you will be able to remember it much longer. So that's the direct technique that I strongly recommend that you try out if you're finding that you're uncovering a lot of boring and abstract details you want to remember better try using a visualization method.