Learning on Steroids:

Advanced Metaphors: Using Stories

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Advanced Metaphors: Using Stories

One of the questions I'm most frequently asked is, "How do I come up with metaphors/visceralizations/links?"

The person asking is often struggling to apply the holistic learning tactics to a particular course. They get stuck and can't see how they could possibly form interesting connections with law/biology/physics/chemistry/etc.

The truth is, you can form connections and metaphors for virtually any subject. I haven't encountered a course yet which wasn't susceptible to this method, and I'm sure it can work on any of your courses. The problem, if you're struggling to find good connections, is sometimes that you don't have a good first step.

Today I'm going to share a great first step for forming metaphors, that is: creating stories as a way of remembering

information. One reason I like this method is that it makes forming connections a little easier.

Why Stories?

People reason through stories. Not data. Not formulas. Certainly not pie-charts. Stories, with characters, actions, plots and conclusions are how we are wired to reason about the world.

Some evolutionary biologists believe that the brain evolved as rapidly as it did in Homo Sapiens, not out of a predatory threat or survival advantage, but because the size of our tribes were growing. With larger communities, there are more relationships to keep track of enemies to watch out for and alliances to keep.

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From this theory, human intelligence wasn't driven out of the necessity to invent tools or ponder the deeper meanings of the universe, but a by-product of Survivor-esque plots and gossip.

I don't know whether this theory is the truth, but I believe it gives a good explanation at why most people are really good at remembering the entire plot of a television series but lousy at remembering a single math equation. Even though the former is often hundreds of times more complex.

Imagine if your dry, abstract subjects, were as easily memorable as the plot to your favorite movie?

That's the goal when using metaphors to create stories. You want to transform the abstract processes or equations and turn them into brief stories with characters, actions and consequences.

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I'll start with an extremely simple example. Let's say you're in a basic chemistry class and you're learning about the periodic table. You want to remember the periodic table, and you are given a bunch of facts about groups of the elements:

-The noble gases are inert and won't react with anything
-The halogens are missing one electron, and will take this from other elements
-The alkali metals have only one electron in their outer shell and will lose this to other elements

Even in the dry, factual stage, you can start to see how you might be able to remember this information as a story.

The characters could be the elements, with Helium, Chlorine and Lithium being the principle actors in a brief story.

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The plot could consist of the interactions between these elements. The halogens steal an electron, the alkali have their outer electron taken from them, the noble gases neither steal nor are stolen from. This pattern of electron transfer can easily be viewed as theft, an element in a short plot.

The basic outline of the story could be that the halogens steal from the alkali metals while the nobel gases do nothing. Pretty basic, but it summarizes the information in the format of an extremely simple plot.

The next stage is to make the story more interesting by adding intentions to each of the actors, as if they were real characters with emotions, drives and context.

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The noble gases could be seen as the aristocrats who have inherited so much, that they don't need to interact with the commoners. The halogens are the desperate street people who are extremely close to buying enough food to eat, when the alkali metals walk around town with their extra purse of money clearly visible jangling on the outside.

Whenever the alkali metals walk through a neighborhood with the halogens, they will almost certainly be robbed, being easy targets. The noble gases are more intelligent and have all their money safely tucked away in a bank account, with no extra wallets hanging around to be stolen, nor with an appetite for theft.

Remembering this story makes the job of remembering those isolated facts much easier.

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Stories also have an additional power over regular metaphors–they can easily be expanded. As you encounter new information, you can weave it into the existing story or modify the existing story to incorporate new information.

For example, as you learn about the alkaline earth metals, which have two extra electrons, you could weave them in as carrying two coin purses, but in carrying more extra money around, they are more wary of thieves and are less likely to get into a violent confrontation.

How to Create Stories to Remember Information

The process is fairly straightforward:

1. Figure out who the **actors** could be from the information you need to understand.
2. Figure out the **actions**, transformations or results that could become the plot.
3. Create a *basic outline* of what's happening, labeling the actors and actions that occur.
4. Imbue the actors and actions with **intentions** and *context*. This is where you take the dull step-by-step and add more details so that the story becomes vivid and more memorable.

Let's walk through a few examples:

Example #1 – Functions in Programming

For those of you not studying computer science, a function is a section of code which can be executed with a particular call. So if you wrote a video game there would probably be functions such as SaveGame(), Render3DObjects() or ButtonPress().

With functions there may be a series of facts you want to remember about the concept:

-Code executed within the function is "invisible" to outside functions.
-Functions can take multiple parameters, but only give one return value.
-They can be passed information by reference or by value.

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The first step, identify the characters and the actions that could be used to make a story. Here, I'd select:

1. **Characters**: Functions, Variables/Data
2. **Actions**: Taking parameters by reference, taking parameters by value, returning a value

The second step is to create a brief description of the plot. The plot doesn't need to be a single story from start to finish, but could even be several stories worked into a description. What's useful is that you're turning abstract ideas into characters with intentions and drives, not writing a bestselling novel.

The basic plot I've decided upon is:

Function takes parameters, some by reference, others by value, it returns only a single value all while processing functions that are invisible to the outside.

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In the final step, I'm going to flesh this basic outline into a more detailed story:

I imagine that the function is a large dinosaur that is being fed by multiple dinosaur-handlers. The handlers can feed the dinosaur in one of two ways: either they can empty the food into the dinosaurs mouth (pass by value) in which it is digested and gone, or they can tie a string to the end of a piece of food. Then, when the dinosaur has finished digesting, they can pull back the remains of that parameter by pulling on the string (pass by reference).

During digestion (the process of the function) the trainers can't see what is happening inside the dinosaur, however at the end they can collect its droppings to do further research on (returning a single value at the end).

Example #2: The Least Squares Method

For those of you who haven't taken anything on statistics, the least squares method is a simple way to find the line of best fit in a plot of data. If you have a graph showing a relationship between two variables, such as the size of a house in terms of square feet versus the price the house sold for, you could use this method to guess the price of a new house of a particular size.

The main idea behind least squares is that you find the line that minimizes the sum of the squared differences between the estimate value and the actual value.

Again, we can start by identifying potential characters and actions. For me, the characters are the data points and the line of best fit. The actions are the interactions to reduce the size of the squared distance between them.

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The basic plot could be that the line is jostling around trying to minimize the squared distance between himself and the many different data points.

I can then improve this story by imagining that the line is actually a man holding a very large and very straight pole. Each of the data points are old grannies knitting quilts attached to the pole, the grannies are very old, so they can't move their position. In order to keep their quilts attached, they have to knit square quilts that connect one corner to the pole and the other to their position where they are knitting.

When the pole carrier moves, the grannies must either quickly knit more quilt to keep the ends attached (which gets even more difficult as the distance increases), or if he moves closer they can remove yarn from their quilts and share it with the other

grannies. The pole carrier will stop when the least amount of yarn is being used.

These examples are a little ridiculous, but they help connect the facts in an interesting way which will make them more memorable. I just picked these two topics randomly and created metaphors for it as I wrote this guide, so I want to insist that you can do this to with any of your subjects.

Implementing this Guide

If you're already using metaphors, then try to incorporate more stories as a way of generating them. If you aren't already using metaphors in your subjects, I suggest reading that implementation guide first and familiarizing yourself with the basics before moving onto a more advanced tactic.

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If you want to go further with this tactic, try creating more complex stories that cover more pieces of information. I just scratched the surface with these three examples, I only incorporated a couple ideas in each. However you could easily grow these to include dozens or even hundreds of individual facts or pieces of understanding.

If you're in a chemistry, computer science or statistics class, you might even want to try expanding the three examples I gave. If you can, add one more element to the story which incorporates a piece of information and share it with everyone in the forums!

That's all for this guide, good luck and I'll see you on the other side!