

*Learning on Steroids:*

# Constructing Mental Highways



by Scott Young

## Constructing Mental Highways

In my book, *Learn More, Study Less*, I bring up the concept of mental highways and explain how it is critical to have powerful creative thinking when solving problems.

The idea behind them is simple. We learn things by linking them together with things we already understand (the basics of holistic learning). The most common way of linking ideas is to compare very similar ideas together. Comparing a cash-flow statement with a balance sheet, or the properties of hydrogen to the properties of helium.

Comparing similar ideas is useful. It allows us to build a construct. A construct is a metaphor I use to describe people who “get” a particular subject. They understand the subject well because they have a tightly woven web of interconnections on a subject. If there is one element they don't understand, they can easily figure out what is missing because of all the other links.

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Think of a construct as being like Wikipedia—even without a search feature, you could still locate many pages simply because they are so tightly interconnected.

So every metaphor, visceralization or flow-based diagram you create helps build up a construct. Sooner or later, you'll have expertise on a topic simply by having tons of connections in your web of understanding.

## Constructs Don't Give Creativity

The problem is that just having a lot of domain-specific knowledge won't help you with truly original, creative problems. Yes—you can come up with new solutions within a subject—but true originality and creativity is hard because so many other people have come before you with a similar level of knowledge.

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To get truly creative solutions you need to have connections between domains of knowledge. You need to have links between the constructs so that your knowledge of chemistry ties back into your knowledge of literature which influences your understanding of computer science. The space between the constructs is often rich territory for new ideas and creative solutions.

I use this in my writing all the time. Generally my best ideas haven't come from my experience in a particular area (whether that's learning or productivity or business) but from unusual associations between ideas.

These crossovers I call highways. While the inner roads of the construct are like city roads—dependable and numerous. It's the difficult highways that allow ideas to be imported from one domain of knowledge to another.

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Today I'll share my favorite method for building these highways.

### Multiple Lenses

The method is really simple, but it is rarely used so taking advantage of it means you can have more creative ideas than your peers. Here's how it works:

1. You write a list of some of the areas of knowledge you have experience in. 10-12 is probably good for a first exercise, but if the ideas are really important you might want to dive deeper and go for 20-30.
2. You pick the topic you want to create highways on. It could be a problem, idea or skill that you want to create unusual associations for.

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3. One-by-one you go through each of your domains or “lenses” and write several paragraphs explaining how the problem could be solved, the idea explained or skill translated from that lens.

The key is to not give up when you first feel like there is no way to translate your problem into that alternative lens. If I gave you a financial calculation and asked you to translate it into the area of literature, you might have considerable difficulty at first. Then you might think back to a novel you read involving Wall Street, or Shakespeare’s *Merchant of Venice*.

Yes, most of your lenses will produce poor answers. That's why you have constructs in the first place—because domains tend to cluster around useful solutions that are highly related. If this weren't the case, there would be little point of having faculties in universities.

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If eight or nine of the ten lenses produce confusing or bad answers, that doesn't matter if one of them produces something insightful and original. Even if the lens itself isn't a creative wellspring, you can use that lens to improve your understanding which can eventually lead to creative solutions.

Just as forming one metaphor or link might not make a subject immediately easier to understand, forming one highway might not either. However, the practice of regularly creating these mental side roads does. If you get in the habit of doing this, creative solutions will be easier.

### Example: Finances

I'll go through this example with the topic of finances.

## Step One: Pick My Lenses

For this example, I've selected ten lenses I'll go through to try to make interesting connections with:

1. Computer Science
2. Drawing
3. Online Business
4. Nutrition
5. Chemistry
6. Games
7. Design
8. Law
9. Politics
10. Weather

## Step Two: Pick Your Topic

I'm going to narrow down my focus away from finances generally (which could make a lot of superficial highways that don't have any creative insights) down to something more specific: compound interest. I want to use these 10 lenses to try to best explain compound interest in alternative terms.

## Step Three: Apply the Lenses

### 1. Computer Science

Compound interest here is nothing more than a while-loop like this:

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```
while (true)
{
    investment_value *= interest rate;
}
```

Each pass of the loop multiplies the investment value by the interest rate resulting in a compounding.

#### **2. Drawing**

Compound interest is like a perspective drawing. Things that are closer to the viewer are closer in the future, while things that are further away are further in the past. If I drew a man from one hundred feet away, he would appear really small. But as he moved closer his size would grow, just as an investment grows with compound interest.

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### **3. Online Business**

Readership levels for a blog compound. Readers tell their friends about the blog, so each reader spreading the word is like each dollar creating interest in an investment. The interest rate is the same as the rate at which readers spread word for the blog. As the readership size (investment size) increases, the effects accelerate, with new readers telling more and more people about a blog.

### **4. Nutrition**

The body uses forces to do the opposite of compounding growth. If one nutrient level goes out of balance, rather than allow a cascade effect of growth, it stabilizes the levels. Compound interest is the result of a lack of equilibrium, and the body (as a regulating entity) can force equilibrium.

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### 5. Chemistry

A chemical reaction can accelerate quickly. As two particles react in a solution, they can release energy. This energy can trigger other elements in the reaction to react as well. The interest rate is similar to the rate of a reaction. If it is very low, the reaction will be very slow, like rust or a treasury bond, if it is high the reaction will be very fast, like a bomb or stocks (which are both more volatile).

### 6. Games

Compound interest is like a character leveling-up in an RPG. As the character gains levels, he becomes stronger, so it is easier for him to gain experience. Levels are usually placed on a logarithmic scale because the ability of the player to gain more and more experience goes up exponentially.

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### **7. Design**

Designing a park can have compounding effects. As people start to walk over the grass, the grass will be flattened. This makes it easier to walk on for other people than fresh grass, which will encourage more people to walk on it. The compounding effect of every person encouraging more walking can eventually destroy the grass.

### **8. Law**

Laws restrict exorbitant interest rates from being charged on borrowers. This is because the compounding effects can easily result in the person being bankrupted.

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### **9. Politics**

Governments borrow money from their people creating deficits. The deficit compounds at the interest rate so that, every year, the government owes more money to its people. If the borrowing isn't eventually paid back, it will grow forever.

### **10. Weather**

The effects of global warming can compound. As temperatures rise, more polar ice melts, which increases the amount of sunlight that is absorbed, and not reflected, by the earth, making it warmer. This makes the planet get even hotter.

## Now You Try...

You don't need to go through all ten. Just try one or two lenses you have and apply them to a subject. Creating mental highways also helps you understand a problem better by creating more metaphors and concepts within the field.

Good luck with this tactic and I'll see you on the other side!