Reversing the Direction of Metaphor

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Introduction

The use of metaphor in science has been well explored. Typically, we use metaphors to take *abstract* concepts and place them within a **concrete** domain. For example, the **channel** of a *cell*; the **folding** of a *protein*; the **flow** of *electrons*. These conceptual metaphors allow us to map abstract concepts onto known experiences (1) and thus make the *abstract* concept more understandable.

Within this poster I want to see if we can take an abstract concept such as a *Jablonski Diagram* or a *Reaction Profile* and map them onto an embodied experience such as a **conversation** or even another abstract idea such as *knowledge*. In doing so can we explore new ways of seeing. Hopefully creating a dialogue between the abstract and concrete (2). Thus, enabling us to explore both more readily. Like every poster in this series, these are unfinished ideas, and I want to have a conversation about them to both refine and expand. Please use the post it notes to add your comments.

Abstract → **Concrete** (1)

Abstract ⇌ **Concrete** (2)

Some context

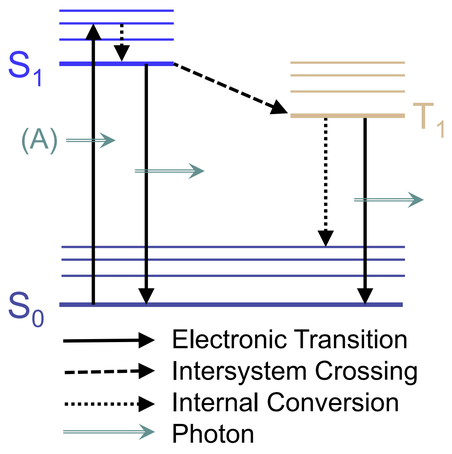
In this work, metaphor is used in the sense developed by Lakoff and Johnson: as a fundamental structure of though, not simply a figure of speech. Unlike Hofstadter's later work on analogy, which links separate conceptual domains, our focus here is within-domain metaphor.

I have used the word **concrete** to signify a domain that is experiential or embodied. We draw on bodily experience (movement, touch, weight). We say *electrons* **flow** because we can grasp the idea of a **flowing river** much more readily than we can of an *electron*.

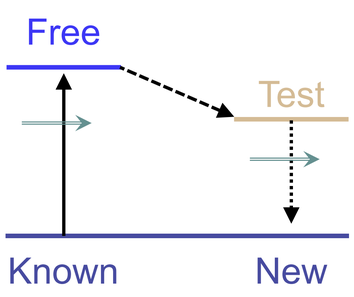
By diagramming the relationship between *abstract* and **concrete** domains we can readily see which one maps onto the other (→). The equilibrium symbol (⇌), borrowed from chemistry, captures a new relational metaphor.

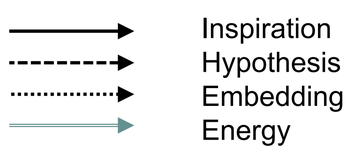
You may have seen *Reaction Profiles* in early science lessons, there is a small description below that may help you to remember them. *Jablonski diagrams* on the other hand are advanced photophysics but represent the electronic transitions through spatial positioning (again, rooted in physical intuition).

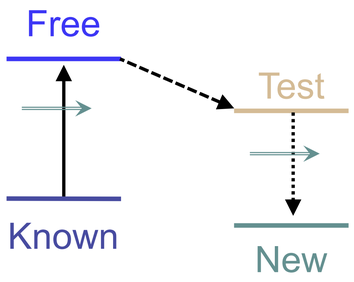
Knowledge as a Jablonski diagram



Jablonski diagrams are used to show the electronic transitions, these transitions happen all the time, from solar panels to the LEDs in your phones. The diagram shows a molecule in its ground state (S_0) absorbing a photon (A). Promoting an electron to a higher energy level called the singlet state (S_1). This is highly energetic and short lived, so can transition into a lower energy triplet state (T_1). Finally, from either state a photon can be released to get back to the lowest energy ground state (S_0).

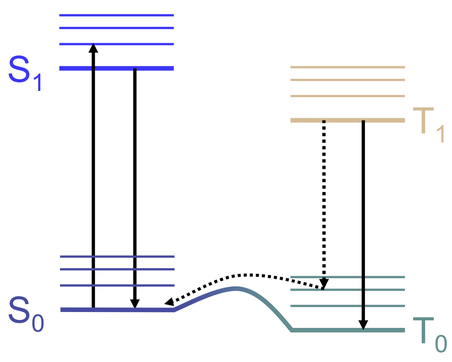






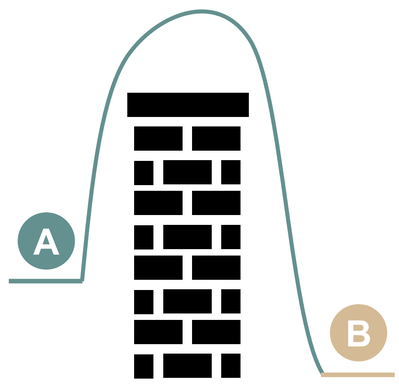
The “concrete” domain we use here is the Jablonski diagram, taking **Known** knowledge as our ground state (S_0), to change a thought we typically become *inspired* to a state of **Free** thought. This takes some form of *energy* as input, a book reading, a joyous conversation, grief, a shower, a dream, repetitive tasks. This inspired **Free** state is short lived and is typically within the context of known knowledge but ideally without limitations. It can also be thought of as a false metaphor. Through a process of *hypothesising* we can create an idea as **Test**. In contrast to the Jablonski diagram though, more energy must be input to *embed* this idea into the canon of knowledge.

The initial diagram has **Known** and **New** knowledge at the same energy level, which implies they’re potentially the same thing. I believe they should be at different levels, here I’ve put it haphazardly below the **Known** knowledge.



The idea of relaxing **Test** knowledge into **New** knowledge implies that this is not equivalent to **Known** knowledge. By applying this to our original thought, relaxation from the triplet state (T_1) doesn’t relax to S_0 but to a new T_0 state. The difference between T_0 and S_0 is only noticeable under some arbitrary conditions. The dialogue between abstract and abstract here has given us something to look for. *This is illustrative of the dialogue, if you’re a photophysicist don’t come after me.*

Conversation as a reaction profile

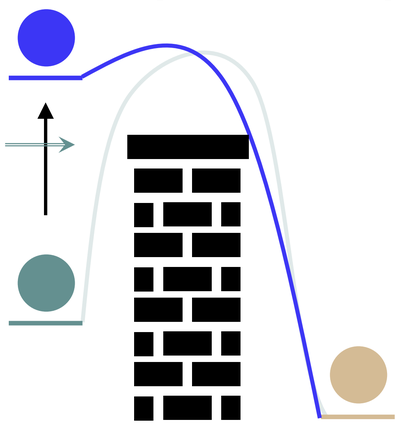


One of the first diagrams we learn as chemists is the reaction profile, it represents the relative energies of reactants, intermediates and products of a given reaction. Here **Reactant A** overcomes the energy barrier illustrated by the **wall**, following the path of the green line to reach **Product B.**

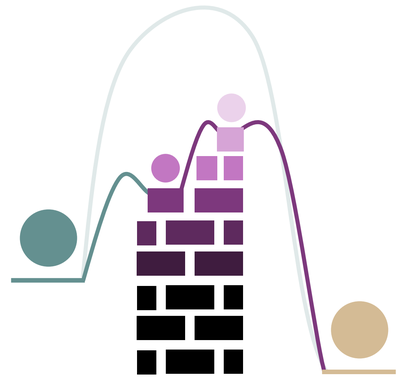
We can invert the normal mapping of *abstract* → **concrete** by using this **reaction profile**, which is abstract, as the concrete domain to explore the less abstract idea of a *conversation* (formally: *concrete* → **abstract**).

To initiate a conversation you must overcome this initial barrier, here we represent being OUTSIDE of conversation as A, the path into conversation by the green line and being IN conversation as B. We can now use our understanding of how to lower the energy of a reaction profile (chemical) to explore how to overcome the barrier of a conversation.

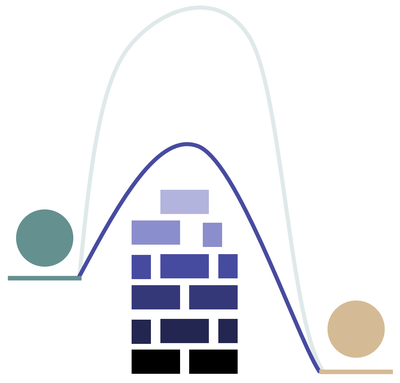
(chemical) Methods to overcome the barrier



Excitation, pushing the system into a higher energy state that is well above the barrier is an easy way of overcoming it. Think of a cancelled train or inclement weather starting a conversation.

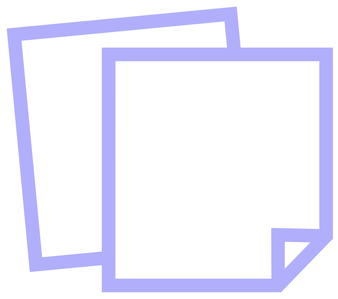


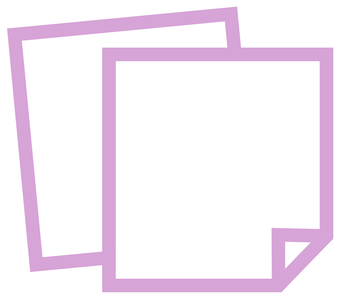
Catalyst, adding a second pathway that can offer an intermediate step. Breaking the barrier into easier steps. Think of this as going to a book club, talking with a group of like-minded people at a philosophy talk.

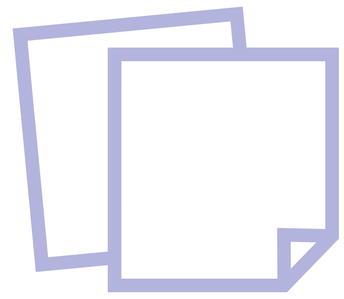


Changing the *environment* that you’re in can lower the energy of the barrier, this both builds from the other two ideas and also supports them. Conversations don’t easily start when people feel trapped.

This way of thinking led me to the Conversational: Environment, Excitation, and Alignment ideas explored on the poster titled: *The Scientific Poster Session – a space for conversation and its adaptation to a new environment*.







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Selected references:
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