A Note on Abstraction

'The most powerful way to gain insight into a system is by moving between levels of abstraction.'

Brett Victor

Here, abstraction refers to the process of finding the **most pertinant feature(s)** of an entity within the current context, and generalising it beyond the specifc case. We start with a single description of a specific protocol (preferably one we believe is good) and generalise the key or essential features for many cases.

$$1 + 2 = 3$$
$$x + y = z$$

For example:

A protocol step which states

"add **2.4 mg sodium azide**"

could be abstracted and generalised to

"add an **amount** of **bacteriostatic reagent**"

There are many features of sodium azide we could focus on - e.g.1) it is a colourless sodium salt, 2) it has a molecular weight of 275°C, or 3) it is often used as a gas forming agent in car airbag systems. However, the important aspect in this context is its effect as an inhibitor of bacterial growth.
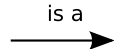
We abstract this particular feature and make it an **independent object of thought** that can be (re)applied to other cases or systems.

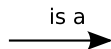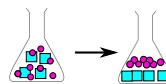## Thinking "is a type of" is often helpful...

e.g.

5804R → is a → swinging bucket centrifuge → is a → separation device

We can ask - which level(s) best capture the most important features for our context?