

## *The Laws of Thought*

The best early philosophers not only examined reality, but also thought carefully about how our reasoning works – they examined the tools to be used in philosophical enquiry. Not only did they create formal logic (an algebra for examining the structure of arguments), but they also noticed a few very basic principles, on which we seem to rely when reasoning. Tradition has picked out three of them as ‘The Laws of Thought’, and there are also a few basic concepts and assumptions that we seem to rely on. What they have in common is that we tend to rely on them, but seem unable to prove them.

The first of the three laws is the Law of **Identity**. This is usually expressed as ‘whatever is, is’, and is written formally as ‘ $A=A$ ’. This may strike us as utterly self-evident, and also utterly uninformative, but it is actually rather important. The point is that you can’t think if you don’t attribute stability to the things you are reasoning about. If you follow some rambling reasoning about A, and later wonder if you are still reasoning about A, you can assert the identity of A with the original A, to keep you on track, or show where you have gone wrong.

The second law is the Law of **Non-Contradiction**. This is usually expressed as ‘nothing can both be and not be’, and is written formally as ‘not (A and not-A)’. That seems to be about existence, but it can also apply to truths, or to a thing’s properties. It might even imply that you can’t accept two concepts if they conflict. The point is that rational people are not permitted to affirm and deny the very same thing. This law is often taken to be the most basic, and even be the very hallmark of rationality. The only thought which might be more basic is the direction perception that something is impossible. It is hard to deny the power of the law, though sceptics say it concerns our psychology, rather than reality. In modern times a few logicians have questioned it, by pointing out tricky cases involving vagueness or ignorance. Supporters of the law say that if you try to deny it, that just shows that you don’t understand the word ‘not’! It is hard to see how you could deny the law, if you didn’t understand what ‘deny’ meant.

The third law is the Law of **Excluded Middle**. This is usually expressed as ‘everything must either be or not-be’, and is written formally as ‘for all A (either A or not-A)’. This law is a bit more controversial, and some modern logicians reject it. The law seems to imply that reality has a clear-cut character, where everything either is or is not some particular way. Critics say we are not always in a position to know such things, and our laws of thought should be more cautious.

A candidate for a fourth law is the Principle of **Sufficient Reason**, though that may be one of our assumptions about reality, rather than a law of thinking about it. In its simplest form it says that ‘there is a reason for everything’. As a principle of thought we might call it the ‘principle of optimism’, since it tells us that we cannot abandon a train of thought by concluding that there is no answer to be had. The principle might also be thought of as the motivation of all rational thought. It is hard to imagine scientists persevering with their enquiries if they weren’t committed to the existence of answers even in obscure cases. A stronger and bolder version of the law claims that every event has a cause. An interesting consequence of commitment to this law is that we can never accept anything as a primitive foundation, because the law insists that there are always further reasons to be found.

A candidate for a fifth law is **Modus Ponens**, because it captures the notion of ‘implication’, which seems to be basic for all reasoning. This says that if A implies B, and you are willing to accept A, then you must accept B [that is A, and if-A-then-B, so B]. To reject B is to reject rational thought altogether. We might quibble over exactly what is meant by ‘implication’, but it looks very plausible to call this fifth case a Law of Thought.

A few concepts which might be considered as laws of thought include the most basic ingredients of simple logic, such as ‘negation’, ‘conjunction’ and ‘disjunction’, and the idea of a ‘domain’ of discourse (captured in ordinary thought by the phrase ‘what we are talking about’). There are also a few basic ideas for comparing ideas, such as ‘opposites’ (which are extremes of unlikeness), and ‘contraries’ (where one concept seems incompatible with the other).

An interesting principle which is a strong guideline for thought, but not usually accepted as a Law, is **Ockham’s Razor**. This is really a principle of explanation rather than of reasoning, claiming that simple explanations are usually to be preferred. The original version says we should ‘not multiply entities beyond necessity’, meaning only use minimal ingredients in an explanation. Modern commentators usually say that this means using a small number of *types* of ingredient (as when we explain a beach by lots of pebbles). There is a rival principle which says ‘if you can’t explain, keeping positing entities until you can’. In building theories of metaphysics or science, Ockham’s Razor is usually applied to the basic entities; if their number is kept down, it doesn’t matter if they lead to a profusion of other entities. The Razor also says we should not have too many theories within one area of enquiry. The principle is implied by Sufficient Reason, since if whatever exists has a reason, then if you can’t see a reason for it, you should presume the entity doesn’t exist. An important distinction is between the ‘ontological’ version of the Razor, which boldly claims that reality itself is simple, and so our theories need simplicity to match it, and the ‘epistemological’ version, which suggests that it is our own thinking which demands the simplicity. Critics say that the human love of simplicity is a weakness, and they point to some evidence of scientists simplifying the facts in order to get neat laws of nature. Simplicity also reduces the chance of error, whereas complexity can get beyond our control.

The obvious question about all of these laws and principles of thought is whether they reflect some deep reality or necessity, or whether they merely describe our psychological preferences. There was a time when identification of a few such Laws seemed to be a deep insight into the rational structure of reality, but modern research has devised so many different styles of logical reasoning, and discovered so many problem cases, that the prestige of the Laws of Thought has somewhat decline.

The possibility of identifying laws of thought which are more fundamental than formal logic, or the evaluation of evidence, remains enticing. Surely all successful thinking must have a shared underpinning that gets it going?