### Note

Feedback mechanisms return data or information from the output of an action back to that action, and that is adjusted accordingly in the next iteration.

Positive feedback loops are self-reinforcing and generally lead to explosions or implosions (subject to resource availability). *Negative* feedback loops are self-correcting (or balancing) and generally lead to stabilisation — like the thermo-regulation in the illustrations below.
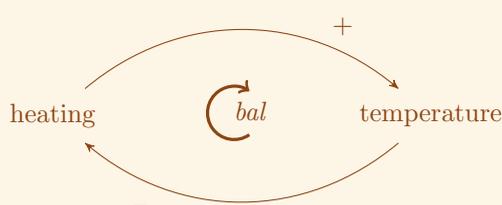
Complex system behaviours are due to combinations of different feedback loops, some of which may be more influential than others.

1 Process View
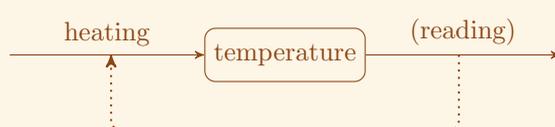
*Feedback schematic*

2 Causality View

*Balancing (or negative) feedback loop*

3 Behaviour View

Positive and negative feedback loops act as *motors* — the former as 'boosters' (§ 3.2) and the latter as 'stabilisers' (§ 3.1). While individual loops produce identifiable trends, the outcome of their combined action is often difficult to predict — save for numerical simulation (Sterman, 2000).

3.1 Negative feedback
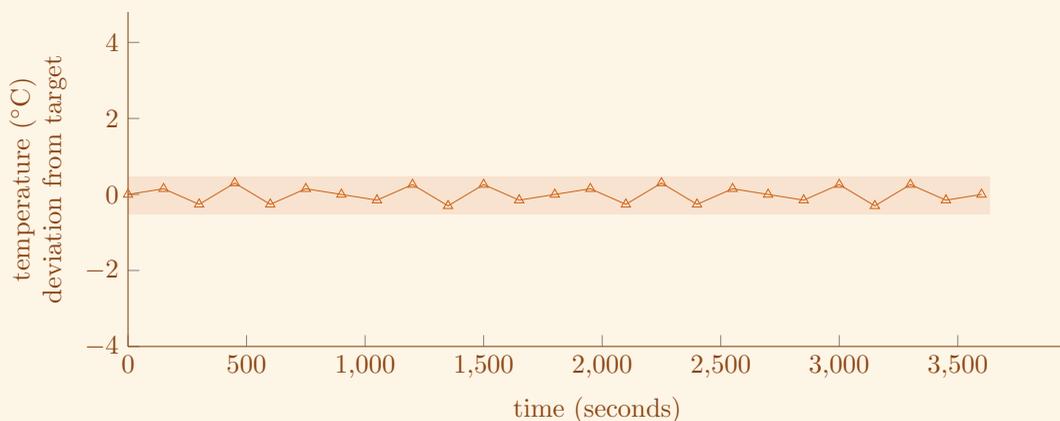
A thermostat helps stabilise *temperature about a target (set) value; the 'smoothness' of control or amplitude of the 'comfort box' depend on the the measurement intervals and/ or the intensity of heating/ cooling*

3.2 Positive feedback
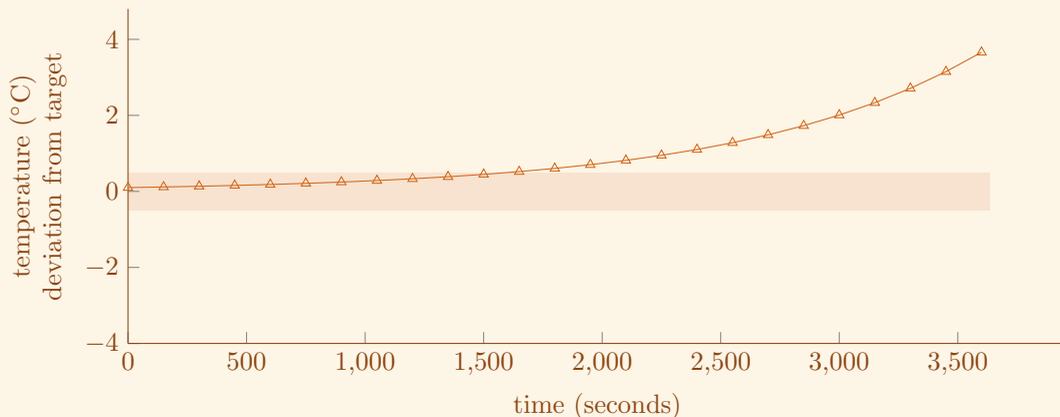
An 'inverted' thermostat (i.e. always exceeding its readings) produces overheating*, which is most notable in the long run — even with a low heating intensity setting, and despite the smooth initial temperature rise*

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