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.

Negative feedback loops (§3.1) are self-correcting (or balancing) and generally lead to stabilisation such as thermo-regulation.

Positive feedback loops (§3.2) are self-reinforcing and generally lead to explosions or implosions, subject to resource availability. Complex system behaviours are due to combinations of positive and negative feedback loops, some of which may be more influential than others.

Feedback has special importance in the context of human communication (§4), as it returns information about the effects of a ‘forward’ action or information — for instance, in a ‘query-reply’ dipole (Perdicoûlis, 2015).

1 Process View

Feedback schematic (NB: non-SPML™ diagram)

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 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.

4 Human Context

4.1 Dialogue

Feedback in human communication includes replies to queries (single-cycle) and forms the base for dialogue — for instance, between two people in multiple iterations, or in more complex ‘daisy’ or ‘ring’ group structures (Perdicoûlis, 2015).

4.2 Meta-information

Human feedback must be assessed for whether or not, or how to take it into consideration, which requires special ‘meta-information’. On this issue, Systems Planning™ practice issues and follows Fairplay Feedback™ guidelines (Perdicoûlis, 2016).

META I (PERSONAL) — e.g. ID, PoV, backgrounds, stakes/ motives, intents
META II (OBJECTIVE) — e.g. information sources, assessment references

Bibliography