GST 103 — An Explanation of Flexibility and Adaptability

Formal Description

Flexibility is the range of responses a system or pre-systemic assembly can use under specified conditions. Adaptability is its ability to adjust to changed circumstances, either by using a different response already available or by changing its organisation. These descriptions distinguish what it is doing now from what it could do when conditions change.

Latent potential contributes to flexibility only where the relevant capability can be accessed in time. This requires a path for the necessary inputs and outputs, together with any resources and coordination the response needs. Reorganisation may open an existing path or create a new capability.

By the end, the learner should be able to distinguish an available response from a blocked or lost one, and explain what would enable a system to adapt.

Plain English Explanation

Imagine two drainnage installations that both deliver the required flow through a main pump. Installation A has a connected standby pump. Installation B has had its standby pump removed. A measurement during routine operation can show the same output from both installations while revealing little about how either would respond to a failure.

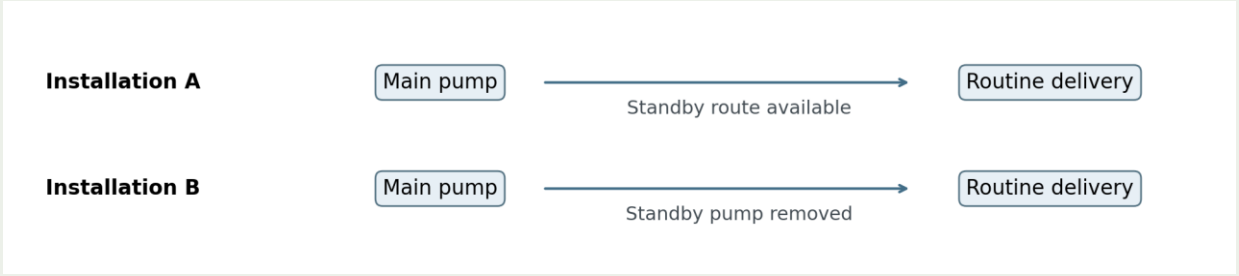
If the main pump stops, A can switch to the standby provided power, control signals and an open flow path are available. If its isolation valve is stuck shut, the standby pump may still be capable of working, but the installation cannot use it to deliver water. In B, opening a valve cannot restore the missing response: a pump must first be fitted and connected.

Switching to a ready standby pump uses flexibility already available. Repairing the valve restores access to a retained capability. Installing a replacement standby pump changes the organisation and restores a capability. Each can contribute to adaptation, but each needs different resources and takes a different amount of time.

To identify what makes a latent response usable we must first identify the change the system must respond to and how quickly it must respond. Then trace the required inputs, the route by which they reach the relevant components and the output that would meet the demand. For example, a standby pump that needs an hour to start may be useful for a planned shutdown but too slow for a sudden loss of supply to the main pump.

Maintaining alternatives has costs. A standby pump may need space, inspection, testing and maintenance even when it rarely runs. Removing it may be reasonable if other responses are available within the required time. Routine performance alone cannot establish whether the saving is worthwhile; the decision depends on what future demands matter and how the system could meet them.

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Both installations deliver through the main pump. Only A has a standby route ready to use if its enabling conditions are met.

Provenance and Links

This module applies the account of activation, access and retained potential in *Causal Assembly Theory: Assembly and Disassembly as Causal Processes*. It builds on the previous module and prepares for the next module's example of an organisational efficiency drive.

Challoner, J. A. (2026). Causal assembly theory: Assembly and disassembly as causal processes. Rational Understanding. https://rational-understanding.com/efgst

Practical Exercise

Compare the two installations during routine operation and after a main pump failure. For each, state what capability exists, what inputs and connections are needed, and whether delivery can be restored within a time limit you choose.

Add a third case: the standby pump is intact but its valve cannot open. Propose a check that would distinguish blocked access from loss of the pump itself. Explain what you could learn from a controlled changeover that a routine output reading would not reveal.

Identify one cost of keeping the standby and one consequence of removing it. State what additional evidence would help you decide whether to retain it, arrange a different response or accept the loss of flexibility.

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