
FRAMEWORK · COMPANION · V1.0

PDCA+ from a cybernetics perspective

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What the framework enables when read through the cybernetic tradition — variety, viability, second-order observation, and recursion.

AUTHOR

Joacim Brandell

Companion to the PDCA+ v2.0 whitepaper · reading framework against Ashby, Beer, and second-order cybernetics

Why this companion exists

The PDCA+ whitepaper describes a structural framework: how management-system disciplines align with each other through a shared conjunction, and how the activities each standard names are properties of the joining rather than properties of the standards. The whitepaper says what the framework is and how to adopt it. It does not say where the framework sits within the older intellectual tradition that has been thinking about these structural questions for seventy-five years.

That tradition is cybernetics — specifically the systems-and-control lineage running from Norbert Wiener and Ross Ashby through Stafford Beer and the second-order cyberneticists. A reader who knows that tradition will recognise PDCA+ as instantiating several of its central ideas without naming them. A reader who does not will get the framework's working logic from the whitepaper, but will miss why it works — and miss the capabilities it enables, which become clearer when the cybernetic vocabulary is on the table.

This companion makes the connection explicit. It does not change anything in the framework. It re-reads the framework through three cybernetic lenses, names the capabilities each lens makes visible, and ends with the limits of the analogy and what would still need to be done to position PDCA+ within the cybernetics literature properly.

The companion is a reading, not a derivation. PDCA+ was not built from the cybernetics literature; it was built from the lived problem of management-system integration. That the two pictures converge is, in this author's view, evidence that the framework has caught something real — but the convergence is *post hoc*, and the framework can be adopted without any knowledge of cybernetics whatsoever. This document is for the reader who wants to understand why the framework's structural moves are not arbitrary.

Ashby: variety, and who has enough of it

Ross Ashby formulated what he called the Law of Requisite Variety in 1956: any system that regulates another system must have at least as much variety — as many distinguishable states — as the system it regulates. If the regulated system can be in a thousand states and the regulator can only distinguish a hundred, the regulator will miss things. The law is mathematically simple and operationally severe. It is the reason no human team, however expert, can hold the alignment between a half-dozen management systems in its collective head once those systems start operating at the speed and breadth of a real organisation.

The whitepaper's diagnosis matches the law exactly without naming it. The problem PDCA+ addresses is not that GRC teams are insufficiently competent; it is that the variety of cross-discipline findings exceeds the variety any human regulator can hold. A configuration drift, a change-authorisation failure, an incident with cross-system implications, a control-effectiveness observation — each of these is a state in a space whose dimensionality is the

product of all bound disciplines' state spaces. The GRC team scales linearly; the variety scales combinatorially. The mismatch is structural, not personal.

Variety engineering

Ashby's law has a corollary, sometimes called *variety engineering*: when the regulator's native variety is insufficient, you have two moves available. You can *amplify* the regulator (give it more states, more reach, more channels) or you can *attenuate* the regulated system (reduce its distinguishable states to a set the regulator can actually handle). Most real regulation uses both.

The conjunction does both, structurally.

Attenuation lives in the conjunction's schemas and taxonomies. A TLS-configuration change becomes a finding of type "configuration deviation, payment-processing tier." The full variety of what happened on the server collapses to a small number of categories the framework can route on. The attenuation is not a loss; it is the conjunction doing the work of making variety tractable without forcing each discipline to reduce its own subject-matter variety in the same way. Each discipline sees its full variety; the conjunction sees what is necessary for routing and coherence.

Amplification lives in the conjunction's translation rules, measurement constructs, and routing patterns. One classification fires across multiple bound disciplines simultaneously. One control-management capability is consumed by every discipline that needs it, without each discipline maintaining its own. The conjunction's reach scales with the number of bound disciplines without the conjunction having to do more work proportionally — the substrate carries it. This is amplification in Ashby's precise sense.

THE VARIETY READING, IN ONE SENTENCE

PDCA+ is variety engineering applied to management-system integration: schemas and taxonomies attenuate cross-discipline findings to a tractable space; translation rules and shared capabilities amplify the regulator's reach to match the organisation it regulates.

The capability this enables is the one the whitepaper claims plainly: alignment that does not depend on human cognition holding the picture. The cybernetic reading is what tells you the dependency was never going to be cured by hiring better humans or running more frequent reviews. It is a variety problem, and variety problems are solved by changing the regulator's structure, not its diligence.

Beer: viability, and how systems stay alive

Stafford Beer extended Ashby's framework into a theory of viable systems — the Viable System Model (VSM). His claim was that any organisation that persists through change must contain five identifiable systems: operations (System 1), coordination among operations (System 2), operational control and resource bargaining (System 3), intelligence about the environment and the future (System 4), and identity, policy, and the closure that decides what

the whole organisation is (System 5). Beer also distinguished System 3* — sporadic audit-style intervention that bypasses the normal control channel when the channel itself may be misreporting. Each of these systems must exist; each must have the right relationships to the others; and the model recurses, so that any System 1 unit is itself a viable system containing its own 1 through 5.

This is a large structural claim and most attempts to apply it to management systems have foundered on the question of which standard plays which role. The answer in PDCA+ is that none of them does. Each standard tries, in its own scope, to be a complete viable system — context establishment is its System 4, leadership and policy are its System 5, operations are its System 1, and so on. The standards are not wrong to do this; their subject matter demands it. What goes wrong is that an organisation running six such complete-in-themselves systems then has six System 5s, six System 4s, six System 2s — and no actual System 2 at the organisational level, because each standard's System 2 only coordinates within its own subject matter.

What the conjunction does in VSM terms

The conjunction occupies the organisational System 2 and a particular form of System 3*. It is not a System 5 — it has no authority over identity or policy. It is not a System 4 — it does not look at the environment or the future. It is not a System 3 — it does not bargain with bound disciplines about resources or override their operational decisions. It is a coordination layer that prevents the bound disciplines from oscillating against each other, and an observation surface that can detect when the coordination protocols themselves are failing.

This is precisely Beer's diagnosis of where most large organisations break. System 1 units (the management systems) are usually adequate. System 5 (policy, leadership) is usually present in some form. What is consistently underbuilt is System 2 — the coordination that lets operationally autonomous units share resources, schedules, and protocols without grinding against each other — and System 3* — the audit channel that can see when the normal channels are not telling the truth. The conjunction is what System 2/3* looks like when the operational units are management-system disciplines rather than business units.

THE VSM READING, IN ONE SENTENCE

PDCA+ describes the System 2 and System 3 of an organisation whose System 1 units are its management-system disciplines — the layer that prevents oscillation between disciplines and observes when the coordination protocols are themselves becoming inadequate.*

The capabilities this lens makes visible go beyond the variety reading. A viable system, in Beer's framework, is one that can survive disturbances its designers did not anticipate. The conjunction's continuous observation, its surfacing of inadequacies in its own substrate, and its ability to revise schemas and taxonomies as bound disciplines reveal their limits — these are not nice-to-haves. They are the structural conditions under which a multi-discipline organisation can remain coherent when its environment changes faster than its policies do.

Recursion and incremental binding

Beer's recursion principle says that every System 1 unit must itself be a viable system, recursively, all the way down. The whitepaper's account of binding declarations and partial bindings is recursion-aware in a way that most integration frameworks are not. A bound discipline runs its own internal PDCA shape on its own subject matter; that PDCA shape is the discipline's own System 1 through 5. The binding declaration is the interface between that recursive level and the level above it. A discipline that has not declared connection still operates as a viable system on its own scope; it simply does not participate in the higher recursion.

This is why incremental adoption works. Recursive systems compose; non-recursive integration approaches do not. An organisation can bind two disciplines first, add three more later, and have a fifteenth discipline join in five years' time, all without re-engineering the conjunction. The substrate accumulates; the recursion holds. Integration approaches that try to define a complete cross-discipline schema up-front fail not because the schema is wrong but because they violate recursion: they treat the disciplines as parts of a single non-recursive system, and any change to one part forces a change to the whole.

Second-order: observing the observer

First-order cybernetics observes the system. Second-order cybernetics, articulated most fully by Heinz von Foerster, observes the observing — it asks what happens when the observer is itself part of what is being observed, and what it means for a system to model itself. The distinction has been productive in cognitive science, in family therapy, in the design of self-aware control systems, and in the constructivist account of how organisations make sense of their own state.

The conjunction is, structurally, a second-order observation surface. Its first-order work is observation of flows: it sees configuration deviations, risk-register entries, incident reports as they pass through its schemas. But its more interesting work is second-order: it observes whether the apparatus through which the first-order observation is happening — the schemas, the taxonomies, the translation rules — is itself adequate to what passes through. When the taxonomy starts mis-classifying change-authorisation failures as configuration deviations, the conjunction is not observing the deviations; it is observing that the lens has become inadequate.

Why this matters in practice

Most management-system frameworks have no second-order observation built in. ISO 27001 has an internal-audit clause and a management-review clause, but both are first-order: they ask whether the controls work, not whether the way the controls are described and categorised is still the right way to describe and categorise them. Periodic standards revision (the publication of new versions of the standard every few years) is a slow, exogenous form of second-order observation, but it is not built into the operating framework — it happens to the framework from outside.

The conjunction's continuous surfacing of inadequacies in its own substrate is second-order observation built into the operating framework. The framework can detect its own model drift. When the world the bound disciplines operate on changes faster than the substrate's schemas can hold, the framework knows — because the schemas start producing classifications that don't fit. This is autopoietic in Maturana and Varela's narrow sense: the system maintains and revises its own conditions of operation.

THE SECOND-ORDER READING, IN ONE SENTENCE

PDCA+ builds second-order observation into the operating framework: the conjunction observes whether its own schemas and taxonomies are adequate to what passes through them, so the framework can detect its own model drift without waiting for a standards revision.

The capability this enables is one that classical management-system integration structurally cannot offer. A framework that cannot observe its own observing apparatus is brittle: it will work until the world it models shifts, and then it will continue to operate as if the world had not shifted, until someone outside the framework notices and intervenes. A framework that observes its own observing apparatus can degrade gracefully — it surfaces the drift before the drift becomes a failure, and gives the disciplines positioned to revise the substrate the information they need to do so.

Capabilities, named

Reading PDCA+ through these three lenses brings six capabilities into clear view. The whitepaper enables them; the cybernetic vocabulary names them and explains why they hold.

Variety matching at organisational scale

The conjunction provides a regulator whose variety scales with the bound disciplines, because the substrate — not any individual — is the regulator. Cross-discipline findings reach the disciplines positioned to act on them without a human in the routing loop. This is Ashby's law respected rather than violated.

Recursive composability

Disciplines bind and unbind without destabilising the framework, because each bound discipline is itself a viable system whose interface to the conjunction is declared explicitly. New disciplines can join later; existing ones can leave. The recursion holds because the framework was designed for it.

Anti-oscillation between disciplines

The conjunction's coordination work — System 2, in Beer's terms — prevents bound disciplines from making decisions that contradict each other. A change-management approval that conflicts with a configuration-management baseline does not produce two competing realities; the conjunction surfaces the conflict to whichever discipline owns the resolution.

Low-latency cross-discipline feedback

Findings reach the disciplines that need them at the rate they arise, not at periodic review cadence. The feedback loop closes at the rate the organisation actually changes, not at the rate the management calendar permits. Continuous regulation matched to continuous variety.

Model-of-self maintenance

Second-order observation lets the framework detect when its own representations are failing. Inadequacies in schemas, taxonomies, translation rules surface at the conjunction; the disciplines positioned to revise them take them up. The framework remains adequate to a changing world without waiting for external intervention.

Lifecycle as emergent property

The organisational lifecycle is the byproduct of well-joined disciplines. Coherence arises from local interactions made legible by shared substrate, not from a master controller. This is the cybernetic point about emergence applied to management systems — and it is the structural claim the whitepaper makes in its first paragraph.

The subtlety about authority

The whitepaper is careful to insist that the conjunction holds no authority over bound disciplines. Read through the cybernetic tradition, this is a more subtle position than it may appear, and worth stating directly.

The conjunction does exercise a form of regulatory power. It determines what is legible across boundaries — what counts as a finding, how findings are classified, which artefacts under one standard correspond to which artefacts under another. Legibility shapes what disciplines can act on, and a substrate that decides legibility is doing regulation, even if it is not issuing commands. James C. Scott's account of how administrative legibility shapes the systems it claims only to describe is relevant here, though developed for states rather than organisations.

Beer would have called this fine and structurally necessary. System 2 has authority over coordination protocols even though it has no authority over operational decisions. The conjunction operating "for those who declare connection" is doing System 2 work properly: it provides coordination services that bound disciplines elect to consume, and it has the structural authority that comes with providing those services — namely, the authority to say what coordination through this substrate looks like — but no authority over what bound disciplines decide on their own subject matter.

This is the more cybernetically sophisticated position, but it is worth saying directly: "no authority over substance" is not "no power." The conjunction is a regulatory layer. It regulates through structural constraint rather than through directive command. The constraint is real and consequential, and pretending it isn't would understate what the framework is actually doing.

AUTHORITY, PRECISELY

The conjunction holds no authority over bound disciplines' substantive decisions. It holds structural authority over coordination — what is legible across boundaries — which is what System 2 work requires. The two are different, and PDCA+ keeps them separate by design.

Limits of the analogy

The cybernetic reading is illuminating, but it has limits worth naming. PDCA+ is not a Viable System Model, and reading it as one would distort both the framework and the model.

First, the conjunction is not a complete VSM. It implements System 2 and a form of System 3*; it does not implement System 3 (operational control), System 4 (environmental and future-oriented intelligence), or System 5 (identity and policy). Those functions live in the bound disciplines themselves, in the organisation's leadership, and in the standards each discipline operates under. The framework is one part of an organisation's viability; reading it as the whole would be a category error.

Second, Beer's VSM is normative — it claims a viable system must have these five systems in these relationships. PDCA+ is descriptive of a particular structural problem: how management-system disciplines align. The framework would still be useful in organisations that depart significantly from a VSM-shaped structure, because the variety and second-order observation arguments hold independently of whether the rest of the organisation is recognisably VSM-shaped.

Third, the variety engineering reading is exact within the scope of cross-discipline coordination, but it does not address the within-discipline variety that each bound standard handles on its own terms. ISO 31000's account of how to handle risk-management variety is a complete cybernetic story in itself; PDCA+ does not displace it. The framework addresses the variety that arises at the seams, not the variety inside each discipline.

Fourth, and most importantly, the framework was not derived from the cybernetics literature. It was derived from the lived problem of management-system integration. The convergence with Ashby, Beer, and second-order cybernetics is real, but it is post hoc. Future work positioning PDCA+ in the cybernetics conversation properly would need to do the derivation work forward — showing how the structural moves the whitepaper makes follow from variety engineering, VSM recursion, and second-order observation as first principles — rather than asserting the convergence from the other direction. This companion piece is the reading, not the derivation.

What this opens up

If PDCA+ is read as the structural framework the whitepaper describes, it stands on its own. If it is also read through the cybernetic tradition, three further moves become available.

- **A Viable System Model account of management-system integration.** The cybernetics literature has VSM-for-organisations, VSM-for-software, VSM-for-government. There is no settled VSM-for-management-system-integration. PDCA+ is closer to one than anything else in the integration literature, and could be positioned in the cybernetics conversation as a first attempt at it.
- **A variety-engineering vocabulary for GRC.** GRC has no shared vocabulary for talking about why integration is hard. The standards talk about controls and clauses; the integration discourse talks about platforms and processes. The variety engineering vocabulary — attenuation, amplification, requisite variety, the regulator-regulated relationship — would let GRC practitioners diagnose integration failures structurally rather than personally.
- **Second-order observation as an explicit framework property.** The continuous-surfacing-of-inadequacies feature of PDCA+ could be developed in its own right as a design pattern for any framework that needs to remain adequate to a changing world. The pattern is general — it applies wherever a framework's representations might drift relative to what they represent — and would be valuable beyond management-system integration.

Each of these is a separate piece of work. This companion is the orientation, not the development. What it offers is the recognition that the structural moves PDCA+ makes are not idiosyncratic — they have intellectual ancestors, and naming the ancestors makes the moves more defensible, more teachable, and more available for further development.

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