Life-Serving Protocols: A Framework for Stewardship, Evaluation, and Cooperative Evolution

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Abstract

This paper develops a framework for evaluating and evolving life-serving protocols within the wider Open Social Protocols (OSP) architecture. Here, life is used in a functional sense: the capacity of an entity or system to maintain organized activity, support needed functions, respond to feedback, adapt to disturbance, and renew over time. A protocol is a reusable and configurable proposal for a repeatable interaction structure intended to serve a need. A protocol is life-serving when its enactment supports those capacities inside and outside a chosen boundary without relying primarily on hidden burden, coercive dependency, or degradation elsewhere. OSP treats protocols as open, inspectable, adaptable, and versioned responses to expressed needs. The Common Ground Protocol (CGP) keeps shared context, evidence, disagreement, identity, and provenance connected as understanding changes. Life Space Protocols (LSP) provides a three-dimensional reference space: Level of Organization × Life Process × Life Dynamic. CGP can point a need or concern to one or more relevant regions in that space. Life Fingerprint (LFP) is the evaluation object used to assess how an enacted protocol affects life-related capacities. It contains four constituent measures: LFP_internal, LFP_external, Discrepancy (D), and Recurrence (R). Their weighted summary is reported as LFP_score. When an agentic entity adopts and enacts a life-serving protocol, it generates observable interactions, consequences, and feedback from which it can be evaluated and revised. The framework operates through an OSP commons of inspectable protocols, adoptions, bridges, feedback, versions, forks, and evidence. Artificial intelligence can assist with retrieval, scoring, evidence tracing, and suggestions, while adoption remains attributable to participating entities. The paper illustrates the method with Buurtzorg and a three-model ChatGPT-Gemini-Claude comparison, then identifies entity assurance and security as future work for open protocol systems.

Keywords: Life Fingerprint; Life Space Protocols; life-serving protocols; protocol stewardship; Open Social Protocols; Common Ground Protocol; discrepancy; recurrence; Ramsey theory; Buurtzorg; reproducibility; artificial intelligence; entity assurance

1. Introduction

Protocol research often asks whether rules are specified, participants comply, or an interaction reaches its local objective. These questions are incomplete. A protocol may work well inside a chosen boundary while exhausting workers, shifting costs to families or suppliers, degrading an ecosystem, or creating dependency outside it. Conversely, an interaction that looks less efficient locally may preserve feedback, develop capability, and increase resilience. Galloway's account of protocol shows how coordination can occur without conventional centralized command (Galloway, 2004); the life-serving question is what repeated coordination does to capacities on both sides of the chosen boundary.

Life Space Protocols (LSP) organizes the domain of life in three dimensions: Level of Organization × Life Process × Life Dynamic. The space indicates where a need, concern, or protocol acts: at what organizational level, through which life process, and with what dynamic over time. A Common Ground Protocol can point to the relevant region of this space. Life Fingerprint (LFP) is the evaluation object used at those coordinates. It contains four constituent measures—LFP_internal, LFP_external, Discrepancy (D), and Recurrence (R)—and a weighted summary, LFP_score. Together they ask what an enacted protocol does to life-related capacities, whether important constraints are being met, and what interaction patterns are being reinforced. The framing draws on Leal (2026) and is compatible with the nested functional emphasis of living-systems theory (Miller, 1978).

Open Social Protocols (OSP) is an architecture for treating social protocols as open, adaptable, versioned responses to expressed needs, while distinguishing a reusable protocol from the entities that adopt it and from what happens when it is enacted (Leal & Radical World Community, 2026). The Common Ground Protocol (CGP) keeps shared context, evidence, disagreement, identity, and provenance connected as understanding changes. The roles are therefore distinct: CGP preserves and relates the shared concern and points to relevant regions of LSP; OSP provides the commons and adoption architecture; and LFP provides the evaluation object. The LFP object contains LFP_internal, LFP_external, D, and R, with LFP_score as their weighted summary. In this paper, "life-serving" is a descriptive term for a protocol's effects; LSP refers specifically to Life Space Protocols.

The objective is not to turn life into a single optimization target or make AI an adoption authority. The four LFP constituents and LFP_score use a 0-100 scale, but their purpose is to expose tradeoffs, support stewardship, and make revision possible. In an open system, participating entities may include persons, teams, corporations, institutions, or autonomous agents, provided their identity, authority, commitments, and consequences can be made attributable.

2. Protocols, adoption, and the wider OSP architecture

2.1 A protocol is a proposal, not an enactment

A protocol is a reusable and configurable proposal for a repeatable interaction structure intended to serve a need. It describes how participants could relate: triggers, relevant information and resources, authority and responsibility, allowed transitions, feedback, review, revision, exit, and forks. It is therefore a testable proposal rather than the behavior itself.

Adoption is separate from the reusable proposal. Protocols are adopted by agentic entities capable of making attributable commitments: persons, teams, corporations, institutions, and, where appropriate, autonomous computational agents. Corporations and other organizations need not pretend to be individual persons in order to participate, but their decision authority, representative roles, and consequences must be visible enough for stewardship and challenge.

The sequence is: reusable protocol → attributable adoption → local configuration → enactment → observable consequences and feedback → continuation, revision, bridge, fork, or exit.

2.2 From needs to gradients, state variables, and viability constraints

OSP begins with a simple question: what is needed here, and what might be tried in response? Some needs can be related to first-principles observations about recurring patterns and constraints in living and social systems; others are immediate capability gaps or tensions. CGP keeps the human statement of need and its context visible and can point to the relevant region of LSP. Gradients, state variables, and viability constraints then provide a simpler working representation for evaluation.

When an observed condition differs from a valued condition, the difference can be treated as a gradient: a gap that can motivate or enable change. State variables describe the parts of that gap that can be observed, while viability constraints state conditions that should not be violated. For example, a need for timely awareness of team dependencies might be represented by information delay, workload, and decision rights. The need explains why the issue matters; the variables help describe it; the constraints prevent solving one problem by creating another.

The representation remains contestable. Measurable variables do not exhaust a human need; participants can challenge the variables, add suppressed needs, or reject the translation.

2.3 The OSP commons

The OSP commons is the wider ecology of inspectable protocols, adoptions, bridges, feedback, versions, forks, lineage, evidence, and implementation history. A domain team can use a curated retrieval view over this commons without creating a central owner of available choices. This resembles Ostrom's broader insight that durable commons need not depend on a single centralized authority when rules, boundaries, monitoring, and revision are visible to participants (Ostrom, 1990).

The structured parts of a protocol record are called protocol elements here. In OSP, protocol field has a different meaning: the visible pattern of people's positions and adopted protocols around shared needs.

Protocol element	Purpose
Need and grounding	Expressed need, relevant first-principles grounding, LSP location, context, and affected parties.
Roles	Participants or functional roles that may adopt or be affected.
Trigger	Conditions that make the protocol relevant.
State	Variables that should be observed before or during enactment.
Viability goal	The state or capability the protocol is intended to protect, restore, or increase.
Transitions	Allowed actions and state changes, including sequencing and branches.
Constraints	Safety, consent, permissions, budgets, legal requirements, and other hard limits.
Flows	Movement of information, care, material, money, authority, responsibility, risk, or capability.
feedback and review	Signals for judging effects, including attributable feedback and scheduled review.
Escalation, exit, and lineage	Conditions for adding/reducing support, exiting, revising, bridging, forking, or recording history.

Table 1. Minimal elements of a reusable protocol record; adoption and enactment remain separate.

3. Life, life space, and evaluative language

Life is used here in a functional and relational sense, not only as a biological category. A living entity or living system is one that maintains organized activity, supports needed functions, responds to feedback, adapts to disturbance, and renews itself and its relationships over time. This definition can apply directly to organisms and, by analogy, to persons, teams, organizations, communities, ecosystems, and agentic software systems when they show these capacities.

LSP organizes this functional view as a three-dimensional space: Level of Organization × Life Process × Life Dynamic. Level of Organization locates the issue within nested systems; Life Process identifies the function, flow, or capability involved; and Life Dynamic describes how that process changes, adapts, cycles, or responds over time. CGP points to one or more relevant regions of this space. LSP therefore tells us where to look; it does not itself say whether an outcome is good or bad. That evaluative role belongs to the LFP object, whose four constituents are LFP_internal, LFP_external, D, and R.

Schrodinger emphasized that organisms maintain organization while embedded in a dissipative world (Schrodinger, 1944), and modern work on nonequilibrium self-assembly studies how organized structures can persist under continuing flows of energy and matter (Singh et al., 2024). A gradient is simply a difference that can support directed change. In a social system it might be a gap in knowledge, capability, resource access, or an unmet need next to available capability. The practical principle is straightforward: do not preserve dependence when another participant can safely acquire the needed capability. When safety and consent allow, transferring capability can be more life-serving than keeping the difference in place.

Regenerative describes an enactment that, under a stated boundary and context, tends to restore or increase future capacity to sense, act, coordinate, adapt, repair, and renew. Extractive describes an enactment that maintains capacity inside the chosen boundary mainly by shifting burden, risk, depletion, or loss of agency outside it. Life-serving is the broader assessment that an enacted protocol supports the capacities associated with life on both sides of the boundary, while remaining open to correction as evidence and conditions change.

These are contextual assessments, not permanent labels. A protocol may be regenerative under one boundary and extractive under another. The LFP profile therefore assesses adopted and enacted protocols conditionally rather than certifying them in advance.

4. Life Fingerprint evaluation and LFP_score

LFP is treated here as one evaluation object rather than four separate scores. It contains four constituent measures on a 0-100 scale: LFP_internal, LFP_external, Discrepancy (D), and Recurrence (R). Their weighted summary is reported as LFP_score. These quantities are not coordinates in LSP. LSP identifies the relevant region of the life space; LFP evaluates what an enactment is doing there. In the present implementation, an AI produces the LFP evaluation from three inputs: the chosen boundary, the available evidence about the current situation, and a predefined scoring rubric that specifies how the four constituents are to be evaluated. The AI reports the four constituents, LFP_score, the evidence and reasoning that drove them, and an estimate of uncertainty. The values are therefore structured judgments, not direct physical measurements. People remain responsible for defining or challenging the boundary, evidence, constraints, and final interpretation.

4.1 The four LFP constituents

For protocol P evaluated at boundary B, the LFP profile is written as:

$$LFP(P; B) = (LFP_{internal}, LFP_{external}, D, R)$$

The LFP evaluation is interpreted over the relevant LSP region rather than defining a second three-dimensional scheme. Level of Organization identifies where causality and decision authority operate; Life Process identifies needed capabilities and flows such as information, maintenance, repair, coordination, learning, acquisition, and renewal; and Life Dynamic asks whether those processes can respond to change, reorganize, and persist. LFP uses those coordinates to evaluate whether an enactment supports or depletes life-related capacity. This framing extends Leal (2026) and is compatible with Miller's emphasis on recurring functions across nested living systems (Miller, 1978).

LFP_internal evaluates these capacities inside the selected boundary. LFP_external applies the same evaluation to materially affected people and systems outside that boundary. A durable but predatory organization can therefore score well internally while degrading conditions outside it; internal resilience and external contribution are different properties.

4.2 Discrepancy: simultaneous viability rather than one-metric success

Discrepancy, D, is inspired by discrepancy theory, which studies imbalance and unevenness (Chen, Srivastav, & Travaglini, 2014). The Discrepancy measure does not apply discrepancy-theory theorems directly. D simply asks whether the current enactment satisfies the important constraints at the same time - for example safety, resources, information integrity, agency, workload, burden distribution, consent, or ecological limits.

The discrepancy score D is high when these constraints are jointly satisfied and falls when important variables leave acceptable ranges, burdens become concentrated, or apparent improvement exports cost, risk, depletion, or disorder. LFP describes broader capacity; D asks how well the current enactment fits its simultaneous constraints now.

4.3 Recurrence: retained interaction motifs

Recurrence, R, is inspired by Ramsey theory's concern with the emergence of pattern in large structures (Graham, Rothschild, & Spencer, 2015). The Recurrence measure does not apply Ramsey's theorems directly. R asks which interaction motifs are becoming repeated and durable: asking before deciding, escalating uncertainty, transferring capability, repairing harm, hoarding information, exporting costs, or other recurring patterns.

The score R is high when motifs currently assessed as regenerative recur across relevant situations and re-form after disturbance while strongly extractive motifs are uncommon. D is a near-term fit measure; R asks what interaction structures the system is learning to make normal and reproducible.

Recurrence is not legitimacy. Harmful patterns can be highly recurrent, and even a motif assessed as regenerative can fail under different boundaries, participants, or constraints. R therefore remains subordinate to LFP, discrepancy, evidence, and continuing attributable adoption.

4.4 LFP_score: weighted summary

The four LFP constituents can be summarized by a weighted LFP_score:

$$\text{LFP_score} = 0.30\ \text{LFP_internal} + 0.30\ \text{LFP_external} + 0.20\ D + 0.20\ R$$

The weights are illustrative and should be calibrated by domain. LFP_score is a compact summary of the LFP object, not a replacement for its four constituents. A high LFP_score must not conceal a catastrophic external constituent or a hard safety, consent, or legal violation. It can support comparison, but it does not determine adoption.

Measure	Question	Primary timescale
LFP_internal	Does the system inside the selected boundary organize, function, adapt, and renew effectively?	Current and medium-term
LFP_external	Does the enactment increase or degrade those capacities among materially affected people and systems outside the selected boundary?	Current and medium-term
Discrepancy D	How well are simultaneous viability constraints satisfied without hidden burden transfer?	Near-term / diagnostic
Recurrence R	Which regenerative or extractive motifs are becoming recurrent and robust?	Longer-term / evolutionary

Table 2. The four constituents of the LFP evaluation object. LFP_score is their weighted summary.

5. Protocol stewardship: responsibility and answerability

Protocol stewardship joins responsibility from within with answerability across the boundary. Participating entities take responsibility for the protocols they adopt and remain answerable for the effects those enactments produce. For collective or artificial entities, stewardship also requires visible authority: others must be able to see who or what is committing, who may revise the commitment, and how consequences are attributed.

Responsibility asks whether participants own their role, judgment, capability, and foreseeable consequences without waiting for supervision. Answerability asks whether they make effects visible to materially affected others, justify the evaluation boundary, disclose burden transfer, and revise when evidence contradicts a claim of value.

The four LFP constituents support stewardship while LFP_score provides a compact summary. LFP_internal concerns capacities participants are responsible for maintaining; LFP_external concerns effects they must answer for beyond the boundary; D exposes constraints or burdens being missed now; and R exposes behaviors repeated adoption is teaching the system to reproduce. Stewardship links claim → adoption and enactment → evidence and feedback → consequences → explanation and revision.

This resembles nonfinancial accounting more than a punitive KPI regime: capability created or consumed, agency gained or lost, burden transferred, resilience changed, and recurrent patterns become discussable. The purpose is explanation and revision, not an unquestionable number.

6. AI as scorekeeper, evidence tracer, and advisor

AI is used as a practical evaluator and advisor, not as the authority that decides what should be adopted. A typical scoring pass is: use CGP to identify the need and relevant LSP region → declare the boundary and affected parties → provide evidence and the current protocol state → have the AI apply the predefined scoring rubric → report the LFP object as

LFP_internal, LFP_external, D, and R, together with LFP_score → show the evidence trace, reasons, and uncertainty → let participants review, challenge, or revise the result. The same AI can use the LSP location and observed weaknesses to retrieve related protocols from the OSP commons and suggest alternatives.

When improvement stalls, the AI should identify the limiting component in plain language. If performance improves inside the boundary while family or supplier burden rises outside it, the AI should flag that shift. If the arrangement is stable only because continuing intervention is required, it may suggest capability transfer, reversible de-escalation, or a resilience test.

The AI should keep a simple stewardship record: boundary, evidence, LFP constituent values, LFP_score, reasons, uncertainty, candidate protocols, accepted or rejected changes, and observed outcomes. CGP provides a way to keep those records linked to protocol versions, adoptions, and feedback. If an AI itself adopts or enacts a protocol, its authority, permissions, model state, and audit trail should also be explicit.

7. Buurtzorg as a protocol ecology

Buurtzorg Nederland provides a useful example because its official model emphasizes client independence, continuity, neighborhood networks, and self-managing teams with professional freedom and responsibility (Buurtzorg International, n.d.). Research describes autonomous teams supported by information systems, a small back office, and coaches without ordinary line authority (Martela & Nandram, 2025). A scoping review of Buurtzorg-derived implementations also shows that translation into other settings varies, reinforcing the need to treat the model as context-dependent rather than universally transferable (Wagemans et al., 2024).

From a protocol perspective, self-management is an outcome of recurring interaction structures. Table 3 presents an illustrative home-care retrieval view over the wider OSP commons.

Template	Trigger	General interaction structure
P01 Viability sensing	Meaningful contact or state change	Observe clinical state, independence, confidence, home constraints, family burden, and workload.
P02 Stabilize	Important variable leaves safe range	Increase support temporarily until stable, then reassess rather than making added support permanent.
P03 Capability transfer	Recipient may acquire a supplied capability	Shift provider → shared → recipient performance with safety thresholds and reversible fallback.
P04 Boundary and burden check	Responsibility shifts or one local outcome improves	Check who absorbs time, risk, cost, anxiety, or agency loss; redesign hidden burden transfers.
P05 Consultation and escalation	Risk or uncertainty exceeds local capability	Bring in appropriate expertise while preserving local authority where safe.
P06 De-escalate and test resilience	Stability and capability exceed thresholds	Reduce intervention, test persistence, and retain a clear restore-support rule.
P07 Protocol review and learning	Completion, repeated failure, surprise, or innovation	Record motif, boundary conditions, score changes, feedback, and failure modes for later retrieval.

Table 3. Illustrative protocol templates retrieved from the OSP commons for the Buurtzorg case; these are reusable proposals, not fixed clinical procedures or adopted protocols.

7.1 Worked example: adoption, dialogue, and AI advice

Consider Elske, a hypothetical 79-year-old recently discharged with a leg wound, diabetes, reduced mobility, and a daughter helping with evening dressings. Nurses Noor and Eva use the commons retrieval view. The scores are illustrative, not empirical Buurtzorg measurements.

At first review the wound is somewhat worse, glucose is erratic, Elske is afraid to perform the dressing, and her daughter is taking on more care. The AI retrieves viability sensing and reframes the state as clinical stability, patient capability, family burden, and workload. The initial LFP object is LFP_internal = 69, LFP_external = 64, D = 58, and R = 63, with LFP_score = 64.

Noor: "I would adopt a temporary stabilization approach: daily visits for five days."

AI: "Clinical stability may improve, but workload rises and dependence remains. The unresolved gradients are Elske's ability to learn the dressing and her daughter's growing burden. Consider capability transfer and a boundary-and-burden check."

Eva: "Make the extra care temporary. Use two intensive visits: Elske observes the first dressing and does as much as she safely can on the second. We also ask her daughter what role she actually wants."

Noor: "If the wound crosses the clinical threshold, we consult the GP. Otherwise we continue the transfer."

After this revision, the LFP constituents rise to 76, 76, 70, and 72, with LFP_score = 73. The adopted configuration now separates temporary stabilization from capability development and makes hidden burden visible.

At the next review the wound has improved and the daughter says she does not want responsibility for routine dressings. The daughter is removed as default fallback; Elske chooses the visit time and increasingly performs the dressing under observation, while escalation thresholds remain. The LFP object becomes LFP_internal = 82, LFP_external = 84, D = 80, and R = 82, with LFP_score = 82.

Three days later the wound is stable but Elske remains reluctant to perform the dressing alone. The AI identifies confidence and capability as the limiting variables and retrieves capability transfer with de-escalation and a resilience test. Elske performs the full dressing while the nurse intervenes only if a safety threshold is crossed. Successful performance reduces visits; failure restores support and triggers reassessment. The LFP constituents rise to 89, 90, 89, and 90, with LFP_score = 90.

At team review, Noor and Eva abstract the case into the motif sense → stabilize → transfer capability → test → de-escalate, with a boundary-and-burden check throughout. They record willingness, learnability, safety thresholds, reversible fallback, family participation by consent, outcomes, and failure modes. This creates feedback and lineage for future retrieval rather than a mandatory standard. The illustrative LFP object becomes 92, 93, 94, and 94, with LFP_score = 93.

The sequence is also a stewardship exercise. Fewer nursing visits are not accepted as value by themselves. The nurses remain responsible for clinical judgment, workload, capability development, and reversibility, and answerable for patient agency, family burden, safety, and continuity. AI makes evidence and tradeoffs visible; people adopt and revise the protocol.

8. Cross-model reproducibility and generative convergence

Figure 2 summarizes the cross-model Buurtzorg comparison using LFP_score, the weighted summary of the four LFP constituents. The three paths are related but not identical. ChatGPT High scored a common staged trajectory, while Gemini Flash Extended and Claude Sonnet 5 Medium were each given the baseline case at T0 and then asked to develop their own T1-T4 protocol evolution before scoring it.

The figure therefore combines two kinds of comparison: how models score care situations, and how they revise a protocol sequence over time. All three move from weaker baseline care toward stronger care that better balances safety, patient agency, family burden, and reusable learning. Gemini briefly declines when it explores premature automation, whereas ChatGPT and Claude rise more steadily. By the later stages the trajectories move closer together, suggesting greater agreement when the protocol becomes more explicit and more reusable.

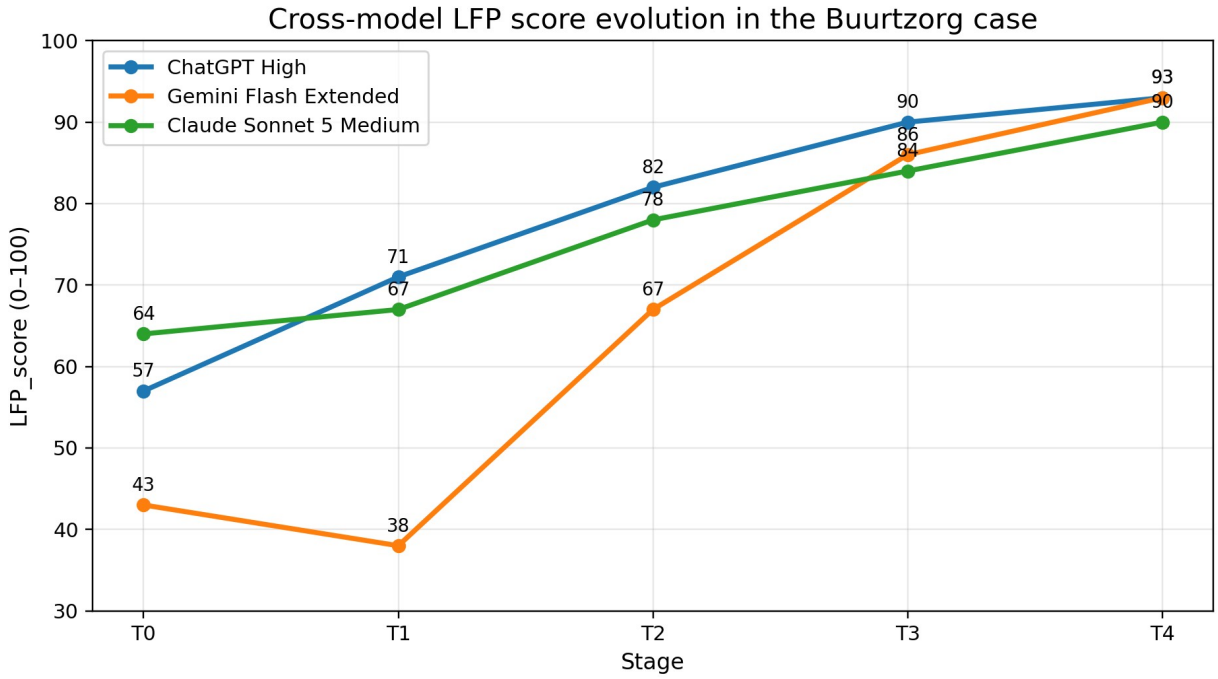


Figure 2. Cross-model protocol evolution in the Buurtzorg case. The plot compares LFP_score across ChatGPT High, Gemini Flash Extended, and Claude Sonnet 5 Medium.

9. Protocol evolution, learning, and composition

The constituents of LFP operate on different timescales. D describes how well the current arrangement fits its important constraints; R describes which interaction patterns are being repeated and retained; internal and external LFP describe life-related capacities on the two sides of the boundary. The learning loop is: need or gap → CGP context and relevant LSP region → candidate protocol from the OSP commons → adoption and local configuration → enactment → evidence and feedback → LFP evaluation inside and outside the boundary → revision or continuation → reusable learning.

Protocols can therefore become visible units of learning and reuse. Organizations still hold assets, bear liabilities, employ people, and provide continuity, but some transferable organizational knowledge can reside in recurring interaction patterns. This parallels Nelson and Winter's treatment of organizational routines as carriers of learned behavior (Nelson & Winter, 1982).

The Organization Defining Engine (ODE) extends the same logic from evaluating protocols to composing teams or organizations. It can identify a missing capability, find complementary people or organizations, propose ways for them to interact, and evaluate the likely effects inside and outside the selected boundary. In this way it can help define team membership as well as improve an existing organization.

10. Measurement, testing, and limits

The four LFP constituents and LFP_score should become more empirical as the framework develops. Useful inputs may include feedback delay, workload, functional coverage, burden concentration, reversibility, recovery time, agency transfer, and recurrence of interaction motifs. The selected boundary must always be stated because changing it can reveal costs that were previously hidden. Evidence quality and score uncertainty should be reported separately from LFP_score.

A reproducible evaluation should preserve a simple trace: observation → protocol feature → affected state or flow → LFP constituent → LFP_score contribution → uncertainty. Repeated AI runs and cross-model comparisons can estimate scoring noise by comparing constituent dispersion, LFP_score dispersion, direction of change, boundary identification, and protocol choices.

D and R are conceptual adaptations inspired by discrepancy theory and Ramsey theory, not applications of their theorems. Likewise, gradients and nonequilibrium organization are useful analogies, not claims that social flourishing is reducible to physics. Goodhart's Law warns that 'Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes' (Goodhart, 1975). The LFP constituents and LFP_score should therefore remain explanatory aids rather than targets to be gamed.

Future work should also develop entity assurance. Open participation allows people, corporations, institutions, and computational agents to take part directly, but identities and authorities can be malicious, impersonated, hacked, or captured. Assurance should therefore be ongoing rather than a one-time check, with inspectable evidence of identity, authority, protocol integrity, behavioral continuity, and signs of compromise.

11. Conclusion

This paper treats life-serving protocols as evolving collections of reusable interaction proposals, attributable adoptions, local enactments, and learned consequences. The architecture separates several roles that had previously been easy to conflate. CGP keeps shared context, evidence, disagreement, identity, and provenance connected and points a need or concern to the relevant region of LSP. LSP is the three-dimensional life space defined by Level of Organization × Life Process × Life Dynamic. OSP provides the commons and adoption architecture for reusable protocols. LFP then provides one evaluation object with four constituents—LFP_internal, LFP_external, D, and R—and the weighted summary LFP_score.

Protocol stewardship combines responsibility from within with answerability across the boundary. Claims of value remain connected to adopted protocols, evidence and feedback, capacities created or depleted, and willingness to revise. Recurrence is not legitimacy; every assessment remains conditional on boundary, context, evidence, and continuing attributable adoption.

The Buurtzorg example shows how the architecture can support professional judgment while making capability transfer, family burden, reversibility, and learning visible. The three-model comparison suggests that explicit protocol structure may support convergence on similar corrective mechanisms and life-serving endpoints even when models take different paths. Controlled repeated trials are now needed to distinguish scoring uncertainty from genuine differences in protocol generation.

Applications extend beyond home care to supply chains, ecological restoration, municipal resilience, research collaboration, governance, software communities, and other systems where value may be created inside one boundary while costs are

displaced outside it. The same logic may also help an Organization Defining Engine identify complementary people, teams, corporations, institutions, or agentic software systems whose capabilities and protocols form a stronger composite team. Future work should add entity assurance so open participation remains compatible with security, provenance, and continuing trust.

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