



Agency

Biological Agency as a Metaphor for Leadership and Teamwork

Contents

Imperative

Introduction: Moving beyond reductionist models

Structural Agency: Leadership isn't just about strategy

Building Networks: Purpose emerges from interaction, not instruction

Local Strengthening: Feedback Loops over commands

Distributed Intelligence: The power of many small decisions

Meet the Agents: Leaders as brains

Summary: Life leads the way

Imperative

In *How Life Works*[1], science writer Philip Ball offers a challenge to reductionism. He refuses to see life as a machine or a puzzle to be reverse engineered. Instead, he invites us to reimagine the concept of **agency** in biology, not as something dictated from above by genes, but as something emergent, responsive, and inherently purposeful.

Life, he argues, is not passively programmed but actively self-organising. Cells and organisms 'decide' what to do through continuous interaction with their environments, forming a living model of dynamic coordination.

This metaphor is irresistible to anyone who has sat in a boardroom and wondered why, despite airtight strategies and well-scripted plans, organisations often fail to adapt. Perhaps, like cells, teams and leaders need more than just instruction. They need the ability to sense, interpret, and act with purpose. **They need agency.**

In my own Leadership Development Program, I have thought and written exhaustively about the need for leaders to grant those they lead the '**freedom to act**'. This concept of 'Freedom of Action' had been hammered into my thinking and decision-making patterns throughout my 30-year military career.

At the beginning of my military career in northern Germany, as we sat off across the Fulda Gap facing a several million strong Soviet and Warsaw pact war machine we knew that our limited resources in equipment and manpower would stand little chance of slowing down the Soviet behemoth if we simply followed the plans laid down by those above us.

Instead, those of us closer to the battle front were encouraged to **appraise** the situation, **evaluate** our Commander's intent' and see '**how**' we could have most effect. This freedom to act, this thinking model, was encouraged from Private to General.

I guess on reflection, or if I were to frame this behaviour in different terms, I had more accurately been called upon, and in turn been calling upon leaders to foster, encourage, and reinforce **agency**.

To me Ball's biological vision offers a compelling metaphor for leadership and teamwork. Rather than treating individuals and teams like mere machines executing top-down plans, we can learn from life itself, where purpose, resilience, and intelligence emerge through connection, feedback, and adaptation. Here are five lessons from biological agency that can help to reshape our thinking on how organisations really work.

Introduction: Moving beyond reductionist models

In Chapter 9 of *How Life Works*[1], titled "Agency: How Life Gets Goals and Purposes," Philip Ball delves into the concept of agency in biological systems. He challenges the traditional gene-centric view that portrays organisms as passive entities directed solely by genetic instructions. Instead, Ball posits that agency emerges from the complex interactions within cells and organisms, suggesting that life possesses an inherent capacity for self-organization and goal-directed behaviour.

Ball explores how cells and organisms exhibit purposeful actions not merely as outcomes of genetic programming but as results of dynamic processes involving **feedback loops**,

environmental interactions, and **internal decision-making mechanisms**. He emphasizes that understanding agency in biology requires moving beyond reductionist models to consider the holistic and emergent properties of living systems.

This perspective opens new avenues not only for interpreting biological functions and the evolution of complex behaviours within organisms but also for discovering how it just might be these very same analogous behaviours and interactions **between** the different teams and individuals within your organisation and the degree of agency that you grant them that is the key to organisational performance.

So, what is agency exactly? Agency refers to the capacity of an entity to act independently, make choices, and pursue goals. In philosophy, psychology, and biology, the term broadly describes an organism's or individual's ability to make things happen intentionally, rather than just being a passive recipient of external forces.

In different contexts:

- Philosophy: Agency is often tied to free will and intentional action. An agent is someone (or something) that can initiate actions based on reasoning, values, or goals.
- Psychology: Agency refers to a person's sense of control over their actions and their consequences. It's a key part of identity and motivation.
- Biology (as in Philip Ball's work): Agency is the idea that even simple living systems like cells can behave as if they have goals, adjusting, responding, and self-organizing, not because they're conscious, but because their internal dynamics enable purposeful-looking behaviour.
- Sociology and systems thinking: Agency is the ability of individuals or groups to influence and shape structures, rather than just being shaped by them.

When we talk about leadership, we often fall back on old clichés and begin talking about control, influence or vision. Most commonly when we do this, we are actually talking about **Power** held by the very few.

Perhaps instead, we should be talking about agency, the conditions under which individuals and teams can respond with purpose, rather than compliance. In an age of complexity, maybe the most vital thing a leader can do is stop commanding and start cultivating agency?

"A lack of agency was a top reason 63% of workers quit jobs in 2021".[2]

Structural Agency: Leadership isn't just about strategy

Agency is defined not by the individual elements in a system but by how they are purposely organised. In biology, cells and systems have evolved together to achieve an **organism-wide series of outputs**. They are inextricably linked to each other's cycles of action, growth and decay.

Indeed, in some cases they signal, steer or control the actions of their neighbours, even if they are a different cell type. It is this regulation, or interconnected signalling that maintains an appropriate structure and function for any given environment.

Regulation is achieved through communication not individual function. Like our business and personal lives, life itself is **context sensitive**. A cell is not governed by a script, but by signals, relationships, and feedback.

In his book 'How Life Works' Ball critiques the idea that DNA is a deterministic "blueprint" that passively governs life. Instead, he shows that:

"Agency arises from dynamic interactions within cells, where outcomes are not pre-scripted but shaped by ongoing, responsive processes. Cells behave purposefully based on context, not rigid code." [1]

Similarly, A thriving organisation is less like a factory and more like a forest: complex, living and adaptive. Structure matters, but only when it serves purpose, not rigidity. Regulation in real time in such organisations is achieved in two main ways. Firstly, self-regulation by each individual or small team is achieved through their knowledge and experience of how to perform their individual task, coupled with a strong understanding of how their role in the organisation interacts with the other functions and roles.

This is relatively easy to achieve in isolation when no change is acting on the organisation. However, as soon as you enter periods of high volatility all good organisations naturally increase their '**chatter**' between individual functions and groups. This essential chatter acts as a series of important external regulators allowing, through the countless myriad conversations and interactions, a natural form of self-regulation and **systemic equilibrium**.

Key Leadership Insight:

Structure supports life, but it doesn't define it. Leaders must design frameworks that respond to change, not resist it. Encourage and promote more chatter.

Building Networks: Purpose emerges from interaction, not instruction

Ball writes that cells find their function through interaction, through a biochemical gossip network of signals and responses. Agency arises not from isolated commands but from dynamic dialogue. Cells are chatty. They co-regulate.

Leaders, too, must shift from issuing instructions to nurturing networks. Goals are not mandates to be imposed, but meanings to be discovered together. Purpose does not descend from above; it is uncovered in conversation, in shared stories, questions, tensions. If a team is silent, it is probably not aligned.

Imagine you invite a group of 5 friends to help you get your newly delivered sofa bed from the pavement outside your apartment all the way up the narrow winding staircase to your 5th floor apartment. The goal is clear, however as none of you have done this specific task before, it is the '**on-task**' chatter that will be the key enabler in getting the sofa bed undamaged to the top of all of those flights of stairs. The very process of aligning your collective actions is totally dependent on achieving effective signalling to begin to discover the optimal route to take.

Ball emphasizes that biological agency emerges through interaction, not just internal mechanisms, but continuous interplay with the environment. Cells "decide" what to do by **integrating signals** from their surroundings and coordinating with other parts of the organism.[1]

In leadership and teams, purpose and direction often emerge not from a single voice at the top but from the collective intelligence of the group. Rather than prescribing goals in isolation, leaders can guide teams by encouraging interaction and dialogue, allowing shared goals to surface from the group's dynamic engagement with their challenges and context.

Key Leadership Insight:

As a leader build connection before you build goals. Purpose is **emergent**, not assigned. Two particular leadership behaviours that you could focus on are Servant Leadership and Inspirational Leadership.

Servant leadership both supports and depends on individual agency: it supports agency by continually asking “**How can I empower you?**”, and it depends on agency because the servant leader’s vision can only be fulfilled if team members **step up** and lead from their seats. In essence, the servant leader is the tide that lifts all boats, as each person grows more capable and autonomous, the whole organization rises.

Inspirational leaders aim to deliver the powerful pull of inspiration by clearly articulating ‘Why’ everyone is there working so hard to achieve a common goal. In doing so they elevate their followers, turning ordinary jobs into a shared mission. They don’t just manage tasks, through their communication of a compelling vision of the future they challenge people to innovate, grow, and exceed their own expectations.

Local Strengthening: Feedback Loops over commands

Biological systems rely on feedback loops to maintain balance and direction. These loops allow organisms to sense outcomes, recalibrate behaviour, and reinforce successful patterns. It’s not about one part giving orders, but about every part responding to changes in the system.

Feedback in teams is not performance appraisal. It is about the leader having a heightened ability for **Attentional Focus**. It is real-time sensing. It’s the hallway glance, the product launch hiccup, the Zoom pause that reveals confusion. Leaders must not just tolerate feedback, they must embrace it, and they must design for it. This means flattening hierarchies of information and creating loops of listening that touch every level of the system.

Traditionally, many hierarchical organisations spend an inordinate amount of effort trying to hide dysfunction and confusion from its upper management echelons. This is simply because our traditional view of accountability has always rested with the individual and not with the team.

Today’s leaders need to be accountable both **for** and **to** their teams, but more importantly today’s teams need to be accountable for the successful completion of the **task**. Today’s organisations will only thrive if they succeed in achieving **joint ownership** of the problem. This radical new approach to accountability and agency is enabled through the emergence of system-wide communication feedback loops. The role of today’s leader is to foster and strengthen these feedback loops.

Teams benefit from the same principle. A command-and-control style of leadership often stifles initiative. Instead, leaders can build feedback-rich cultures where actions are continuously assessed and adapted. When communication flows in all directions and people

feel the impact of their decisions, the team can become more self-regulating, resilient, and aligned.

Key Leadership Insight:

Control comes not from command but from circulation. Design systems that hear themselves and develop your own Attentional Focus abilities to really be able to ‘see’ what is going on.

Distributed Intelligence: The power of many small decisions

In cells, intelligence is distributed, no single molecule “knows” the full picture, yet coordinated action arises through many small, local decisions. Agency in biology is not centralized but emergent.

Leadership can mirror this by recognizing that effective teams don’t require every decision to flow through one leader. Trusting people to make context-aware decisions enables a collective intelligence that’s more responsive than any single person’s viewpoint. Distributed agency builds ownership and taps into the team’s full potential.

Perhaps the most underrated benefit of widespread agency is its impact on organizational agility and resilience. In fast-changing environments, companies with empowered employees can respond and adapt far quicker than those waiting for orders from the top. When challenges arise or customer demand change, an agency-rich culture acts like a thousand eyes and ears, with people at the periphery making swift decisions to solve problems.

This widespread agency not only conveys benefits for the customer, more importantly when trust and chatter abound between different elements of your organisation, you will quickly notice that the organisation has taken on a more organic-like state, able to shape shift and adapt its form and function.

This organisational plasticity capable of morphing its capabilities through the compounded effects of its chattering agents is the only type of organisation that will be capable of surviving and flourishing in today’s age of accelerating change.

Key Leadership Insight:

Empower the edges. Smart systems emerge when decisions are made where the action is. Support the rewiring of your organisation. Encourage those that actually do the job to find the most efficient way to achieve their own and the wider organisation’s outputs.

Meet the Agents: Leaders as brains

On a bustling factory floor in Toyota City, a line worker notices a defect creeping down the assembly line. Instead of silently watching the flaw pass by, she pulls a cord above her station. Alarms buzz and the entire production halts. In many companies, a low-level employee stopping the line would be unthinkable. But at Toyota, any employee can stop the process to signal a quality issue. Toyota refer to this phenomenon as ‘intelligent automation and it forms a core part of the Toyota Production System (TPS).[3]

Agency is not autonomy alone. It is responsiveness within structure. An agent acts not in isolation, but in relation to context, to values, to past experience. Ball writes of organisms that “**attend to what matters**,” filtering noise, adapting with purpose.

Leaders must recognize people not as roles but as agents: meaning-makers navigating constraints. Leadership is not about eliminating constraint; it is about creating the conditions in which purposeful action can still thrive. Great leaders don’t just direct agents, they respect them. It is this respect that is at the heart of Toyota’s intelligent automation. They understand that leveraging the agency of thousands of workers is a far smarter way of achieving organisational quality.

In Ball’s book ‘How Life Works’[1] he challenges the idea of life as passive. Organisms shape their own outcomes, they are agents, not just effects. If we scale things up a little, people are the same. When leaders treat individuals as active participants, not cogs, they unlock energy, creativity, and commitment. Agency is both a biological principle and a **leadership imperative**.

Agency requires information and energy. An agent uses external energy to organise the organism/organisation into something meaningful or purposeful. Agents attend to what matters, the affordances, they react to environmental stimuli and using values, meaning and goals enable the organism to use the information it has stored within its component parts or adapt to new information. Leaders act as simple brains reinforcing the flow of vital information and acting as a repository for the data, information and meaning that the agents have collated.

Key Leadership Insight:

People are not passive. Make it your leadership function to **design for participation**, not compliance. Rigid, multi-layered approval processes are the enemy of agency. Push authority down to the level where information is richest, often that’s near the front line.

Summary: Life leads the way

Agency, Ball shows us, is the hidden **engine of life**. It is not scripted. It emerges. It listens, adapts, reorients. It balances freedom with form, energy with structure. To lead, like life, is to embrace this dance, to create organizations that pulse with purpose, evolve with their environment, and act as if something truly matters.

Leadership isn’t about rigid control; it’s about nurturing systems where agency can flourish. Just as biological life organizes itself through feedback, interaction, and shared purpose, effective teams thrive when people are empowered to think, act, and adapt. The more leadership resembles life, the more alive our organizations become.

At its heart, championing agency is an act of **faith in people**. It’s a belief that talent and insight are distributed widely, not just concentrated at the top, and thus everyone should have a voice and a stake. Servant leadership and Inspirational leadership illustrate different facets of this philosophy, but they converge on a fundamental point: the best leaders create more leaders, not more followers.

They understand that a chorus of empowered voices will out-perform a solo from the CEO every time. In the symphony of a modern organization, the role of a leader is sometimes to

step off the podium, hand the baton to the orchestra, and let individuals' agency unleash a richer harmony. The melody might surprise you, it may riff and improvise in ways top-down management never would, but as many companies and communities have discovered, entrusting people with the freedom to act is often precisely what strikes the innovative, resilient chord needed to thrive. In the end, when workers take the wheel, we all go further.

Bibliography:

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