

Dynamic Symmetry, Ethics, and Power: Order–Chaos Balances in Governance, Medicine, and Education

OXQ Editorial I/XXVI

Abstract: Dynamic symmetry theory holds that many complex systems function best in an intermediate regime between rigid order and unstructured volatility. Within that regime, systems maintain enough stability to persist and enough flexibility to adapt. This paper develops the ethical and institutional implications of that claim. It asks what ought to count as a “good” balance between order and chaos in governance, medicine, and education, and how such balances are shaped by values and power rather than by system performance alone. Drawing on work at the Schweitzer Institute integrating dynamic symmetry with Schweitzer’s ethic of “reverence for life”, and on recent arguments that complexity thinking in health care must attend to value conflicts and inequities, the paper argues that any application of dynamic symmetry to human systems must be normatively explicit. A DSI-type framework can illuminate how institutional structures affect resilience, adaptability and vulnerability to cascades; but the decision to steer a system towards one region of the order–chaos spectrum rather than another always reflects judgements about whose interests matter, which risks are acceptable, and what kind of life is worth protecting.

Dynamic symmetry theory arose in part from reflection on systems that clearly cannot be understood as static arrangements. Ecological systems, for example, do not simply sit in equilibrium; they oscillate, reorganise and pass through episodes of disturbance that, when adaptive capacities are preserved, can lead to renewal and diversification. Healthy forests, wetlands and agricultural landscapes exhibit fluctuating patterns of order and unpredictability. Fire, flood and pest outbreaks are not always threats to be prevented at all costs; they can also be catalysts for new configurations. The Schweitzer Institute’s articulation of dynamic symmetry emphasises that conservation policy should not aim at freezing ecosystems in some idealised past state, but at sustaining the capacity of living systems to reorganise and to continue thriving under changing conditions.

In that environmental context, the ethical orientation is explicit. Schweitzer’s “reverence for life” is taken as a guiding value: the aim is to support the flourishing of living systems, human and non-human, across time. Dynamic symmetry theory contributes a descriptive and predictive account of how such flourishing is possible in systems that are never static: by maintaining a moving balance between order and chaos, or, as the Schweitzer Institute sometimes puts it, between stability and disturbance. The ethical and the scientific are not kept separate. Rather, the scientific framework is said to “offer practical guidance for evolving conservation strategy”, while the ethical commitment supplies the criterion against which strategies are judged.

When dynamic symmetry is extended to institutional settings—governments, health systems, schools and workplaces—the same dual structure appears. On the one hand, there is an empirical claim: that systems with certain structural features—distributed control, feedback, modularity, and the avoidance of both over-centralisation and fragmentation—tend to be more resilient and creative. On the other hand, there is an ethical claim: that resilience and creativity are not neutral, but desirable properties, because they support lives and practices that we have reason to value. The question is how to make this second element more explicit and more accountable, particularly where institutions exercise power over vulnerable subjects.

In governance, for example, dynamic symmetry argues against both rigid, one-size-fits-all regimes and purely reactive, improvisational responses to crises. The Schweitzer Institute’s discussion of deforestation and terrestrial ecosystem management explicitly criticises inflexible regulations and

advocates adaptive models: community-led stewardship, agroforestry and responsive frameworks that can adjust to local knowledge and shifting climatic or socio-economic conditions. Such schemes are described as creating a “dynamic equilibrium” in which human needs can be met without undermining the long-term integrity and diversity of forests. The ethical claim is clear. A good balance between order and chaos in this context is one that satisfies basic human requirements for food, shelter and livelihood, while safeguarding the continued flourishing of non-human life. That balance is not given by the DSI as such; the index can, at best, track whether the institutional and ecological system is maintaining adaptive capacity or slipping into collapse. The decision to privilege certain uses of the forest, to distribute rights in particular ways, or to tolerate specific risks, is a question of justice and value, not merely of stability.

Similarly, in the governance of climate systems, dynamic symmetry is invoked to argue for restoring a “natural equilibrium” that has been disrupted by anthropogenic forcing. The climate is described as a system that naturally maintains a balance between stable patterns and variability. Climate change pushes it into unstable regimes. A dynamic-symmetry approach suggests interventions that enhance the climate system’s ability to self-regulate—through diverse, interconnected initiatives—rather than a fantasy of direct, rigid control. Once again, this is both descriptive and normative. It assumes that there exists a region of climatic behaviour that is preferable to the extremes of runaway warming or deep glaciation, because it supports the conditions under which human and non-human life can flourish. The science can show how far we are from such a regime and which interventions are likely to move us closer. It cannot, on its own, decide whose losses are acceptable in the process.

The medical field offers a more explicit reflection on these limits. In a recent commentary in the *Journal of Evaluation in Clinical Practice*, Trisha Greenhalgh argues that “mathematical complexity can explain nonlinearity and network effects but it cannot explain human values”. Complexity science, she suggests, is necessary but not sufficient in health research and policy. It reveals that every clinical problem is embedded in a larger system, that causal chains are tangled, and that small changes can have disproportionate effects. Yet if complexity is interpreted solely as a mathematical property of networks, it risks overlooking how health systems are historically and culturally shaped, how power operates through funding, publication and professional hierarchies, and how deeply held values and standards generate mistrust and conflict.

This critique is highly relevant to dynamic symmetry in medicine. If a DSI-like metric is applied to hospitals, primary care networks or public-health infrastructures, it might indeed provide insight into resilience and vulnerability to cascades: how close a system is to being overwhelmed by an epidemic, how brittle the supply chains for essential medicines have become, or how likely a new technology is to trigger unintended consequences. But treating a high DSI as simply “better” would be a mistake. The question “better for whom?” is unavoidable. A configuration that maximises overall throughput and responsiveness might, for example, do so by intensifying the workload and psychological strain on staff in ways that violate their sense of professional excellence and moral responsibility. Greenhalgh notes that clinicians often resist the introduction of new technologies or ways of working not because they are irrational or “anti-innovation”, but because they perceive that the standards of good care they were taught cannot be upheld under the proposed system.

A morally serious application of dynamic symmetry in medicine would therefore require explicit articulation of the values that a “good” balance between order and chaos is supposed to protect. These might include timely access, safety, continuity, professional integrity, equity, and respect for patient autonomy. A regime that achieves high adaptability and apparent resilience while systematically marginalising some groups, or suppressing dissent about safety concerns, would not count as good, even if its DSI score were impressive. In Greenhalgh’s terms, a complexity framework that neglects “value complexity” misses debates about inclusivity, decolonialism and

structural inequities, and focuses narrowly on study design and methodological optimisation. Dynamic symmetry theory, if it is to contribute to ethical health policy, must not repeat that error.

Education presents analogous questions. The OXQ materials on “Everyday” and on school-level case studies suggest that effective schools behave, in some respects, like living systems: they exhibit distributed control, continual feedback, open communication, and modular structures that can be reconfigured in response to stress. Dynamic symmetry is used to interpret classroom routines and institutional culture as patterns that can become too rigid—squeezing out creativity and goodwill—or too chaotic—leading to breakdowns in learning and behaviour. Small changes in rules, expectations and channels for pupil voice are treated as ways of shifting the system towards a more workable balance between structure and freedom.

Here, too, there is a risk of sliding from description to unexamined normativity. A school that sits near an “edge” between order and chaos may indeed be more resilient and engaging, but only if the distribution of power and recognition within that school is just. A culture that allows for experimentation and pupil agency only for already advantaged groups, while maintaining harsh rigidity for others, cannot be praised simply because its overall DSI lies in some optimal band. Nor can a system that achieves high grades and institutional stability at the cost of chronic anxiety, burnout or the suppression of intellectual curiosity among students.

What, then, should count as a “good” balance between order and chaos in governance, medicine and education? The answer cannot be given by dynamic symmetry theory alone. It emerges from an interaction between descriptive insight and ethical reflection. The descriptive insight is that systems which are too tightly controlled or too loosely structured tend to fail in characteristic ways. Forests locked into fixed management plans lose the capacity to adapt to disease or climate change. Health systems that rely solely on rigid protocols struggle with novel threats; those that lack basic organisational discipline cannot guarantee safety. Schools that enforce uniformity suppress diversity of thought; those that lack consistent expectations drift into disorder. Dynamic symmetry helps us to name these patterns and to diagnose when a system is approaching a dangerous regime.

Ethical reflection then qualifies and directs these diagnoses. Schweitzer’s ethic of reverence for life, as interpreted by the Schweitzer Institute, introduces a hierarchy of moral concern that starts from the intrinsic value of living beings and extends through biocentric and ecocentric perspectives. In that framework, a good balance in environmental governance is one that protects the long-term adaptability and flourishing of human and non-human life, even at the cost of short-term efficiency or profit. Greenhalgh’s argument about values in complexity suggests that a good balance in medicine is one that allows health systems to respond to complexity while also respecting professional standards, cultural differences and structural justice.

In education, one might propose analogous criteria. A good balance is one that supports robust learning, critical thinking and personal development, while maintaining a safe and supportive environment. It will likely include room for teachers and students to exercise judgement, to challenge norms and to experiment, but also clear boundaries against harm, discrimination and neglect. Dynamic symmetry theory can support such aims by showing how certain patterns of structure and variability align with resilience and growth, but it cannot decide that resilience and growth are more important than, say, narrow test score maximisation. That ranking of goods must be argued for, not assumed.

Power enters the picture wherever dynamic symmetry is used to justify institutional arrangements. An index that summarises the order–chaos balance in a system can easily be appropriated by actors who benefit from particular regimes. In environmental policy, a government or corporation might use the language of “dynamic equilibrium” to justify continued exploitation, claiming that a forest

remains adaptive while ignoring the loss of species that are not economically valued. In health systems, appeals to complexity can be used to obscure responsibility, suggesting that harms are an inevitable feature of a turbulent environment rather than the result of choices about staffing, funding or technology adoption. In education, slogans about “learning at the edge” can mask widening inequalities in who bears the risks of experimentation.

A responsible philosophy of dynamic symmetry must therefore pay close attention to who defines the metrics, who interprets them, and whose voices are heard in debates about where a system ought to be on the order–chaos continuum. The Schweitzer Institute’s emphasis on community-led stewardship in environmental management recognises this: local knowledge and participation are presented as crucial to adaptive, just governance. Greenhalgh’s call for attention to value conflicts, inclusivity and decolonial perspectives in health research points in the same direction. These interventions suggest that a good institutional application of dynamic symmetry is one in which those most affected by system behaviour have meaningful influence over how that system is structured and where it is steered.

It follows that the ethical content of “good balance” cannot be reduced to a single number. DSI and related measures can serve as diagnostically useful proxies for resilience, adaptability and vulnerability to cascades. They can alert policymakers, clinicians and educators to configurations that have historically led to failure. They can help to identify levers—such as feedback mechanisms, degrees of decentralisation or redundancy—that have predictable effects on system stability. But the choice of target ranges, the weighting of risks and benefits, and the evaluation of trade-offs ultimately draw upon ethical and political judgement.

In conclusion, dynamic symmetry theory has significant ethical and institutional implications precisely because it claims to speak to how systems ought to be structured, not only to how they behave. In governance, it encourages flexible, adaptive arrangements, but must be anchored in commitments to justice, participation and the protection of life. In medicine, it can enrich complexity-aware design of services, but only if it acknowledges that values and power relations shape what counts as good care. In education, it can inform efforts to balance structure and freedom in schools, but cannot bypass questions about whose flourishing is being pursued.

The more systematically these normative dimensions are addressed, the more credible dynamic symmetry will be as a framework for guiding real-world institutions. Without them, there is a danger that the language of order and chaos becomes a new technical vocabulary for old asymmetries of power. With them, there is the possibility of an approach to complexity that does not merely describe how systems endure, but also helps to articulate what it would mean for them to do so in ways that are ethically defensible.

Further Reading

Schweitzer Institute. "Principles." Schweitzer Institute website: www.schweitzer.institute/principles. Explores the integration of dynamic symmetry theory with Schweitzer's ethic of reverence for life, and draws out implications for conservation, climate policy and adaptive management.

Rattigan, Benedict. "Symmetry." redrattigan.com/symmetry. Introduces dynamic symmetry theory as a contemporary framework for understanding how systems maintain adaptability and resilience at the edge of order and chaos, with applications from physics to institutions.

Greenhalgh, Trisha. "Without Values, Complexity is Reduced to Mathematics." *Journal of Evaluation in Clinical Practice* 31(1) (2025): e14263. Argues that mathematical complexity science in medicine must be supplemented by explicit engagement with human values, power and structural inequities.

OXQ. "Everyday" and related materials. OXQ website pages that apply dynamic symmetry and the Dynamic Symmetry Index to offices, schools and everyday situations, highlighting organisational features that resemble living systems. www.oxq.org.uk/everyday

Helbing, Dirk et al. "Democracy by Design." Discusses how digital governance architectures can be shaped to support democratic rather than autocratic or technocratic forms of power, relevant to debates about structural balances in complex institutions.