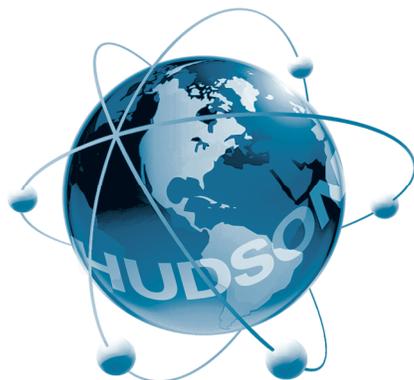


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Policymaking at the Edge of Chaos: Musings on Political Ideology Through the Lens of Complexity

By Christopher Ford

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Policymaking at the Edge of Chaos: Musings on Political Ideology Through the Lens of Complexity

by

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Synopsis

Though there seems little reason why it should not yield insights when applied to the complex adaptive systems of human society, the field of Complexity Theory presents special problems for anyone looking to it for lessons in the field of public policymaking. In particular, complex systems’ nonlinearity and sensitivity to initial conditions seems to have subversive implications for policymaking, inasmuch as the unpredictability that they imply undercuts the very possibility of purposive policymaking. Complexity presents a “policymaker’s paradox,” for even as it suggests that small policy inputs can sometimes have an enormous impact upon systemic outcomes, it also seems to teach that we cannot predict what results our policy choices are likely to have over time. When outcomes are radically resistant to prediction, they are also necessarily resistant to the sort of deliberate control that policymaking traditionally assumes it possible to assert.

After outlining this dilemma, this paper explores one possible, albeit only partial, response: an approach to policymaking that focuses with special emphasis upon shaping the conceptual frameworks that guide and channel human behavior within complex adaptive social systems. Experts continue to debate the degree to which Complexity insights from the hard sciences can translate into the social sciences. A focus upon the ideational constraints upon, and drivers for, unit-level operational behavior in a social system seems warranted, however, because humans’ susceptibility to tying behavior to such frameworks distinguishes them from unit-level elements of the complex systems investigated in other fields (e.g., chemistry, physics, computing, mathematics, or evolutionary biology). Accordingly, this paper suggests the possibility that policy interventions

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in the realm of ideas may have more potential to create transformative change than many other types of intervention. Such interventions are perhaps also able to produce change that is more “predictable” than Complexity would otherwise tend to suggest, inasmuch as conceptual “memetics” can create characteristic behavioral patterns over time as ideas propagate themselves in conceptual “families” and thus continue to shape actors’ choices in recognizable ways.

The paper explores this notion through the use of a case study: the evolution of the “separate development” ideology of racial apartheid in South Africa from the 1950s to the beginning of the 1990s. Outlining the origins of this system in a deliberate effort of ideological entrepreneurship by ideologists within that country’s then-ruling National Party, the paper then follows the evolution of separate development theory as it struggled with domestic and international contestation, internal contradictions and tensions, and competition from other ideological frameworks until its effective dissolution with the coming of universal franchise within a system of constitutional rights in the early 1990s. This paper uses examples from the history of South African separate development theory to illustrate Complexity Theory’s utility as a lens through which to examine political ideology, and to suggest – in light of the peculiar power ideas seem to have to shape behavior, for good or ill – the potential value of a more self-consciously ideational approach to public policy.

I. *Introduction*

Complexity Theory has provided valuable insights in a number of fields. Its contributions have been most pronounced in the sciences, but there is also a significant and growing literature exploring the implications of Complexity in the social sciences. The emphasis of most work to date on Complexity in the “soft” world of social sciences and public policy, however, has for the most part been analytical, rather than normative or prescriptive. Yet if Complexity offers us lessons about the behavior of complex adaptive systems, and if it is indeed possible to conceive of human society as a complex adaptive *social* system, then Complexity may also have something valuable to teach public policymakers – whose job it is not simply to describe or understand their world but in fact deliberately to alter its course in some fashion.

This paper posits that policymakers can indeed learn from Complexity, but that it presents significant challenges to the very *idea* of public policy, and the lessons it offers are not straightforward. Let us explore these issues.

II. *Complex Applications*

There is already a sizeable literature seeking to apply Complexity-related insights to organizational theory, particularly with regard to business structure and operations. Beginning with the work of Pierre Wack for Royal Dutch/Shell in the 1970s, for example, businesses have

been learning a great deal about the importance of scenario-based planning – a method of trying to cope with the unpredictable nonlinearity of one’s operating environment that does not tie an organization’s fate quite so dangerously to the linear assumptions of traditional trend-extrapolating strategic planning. As popularized by Peter Schwartz and others, such scenario-based methods are certainly not always articulated in terms of Complexity Theory. (Indeed, Schwartz goes to far as to suggest that scenario planning enables leaders to “*reduce th[e] complexity ... [and] unpredictability*” of their future environment,¹ which in Complexity terms is preposterous. In fact, all scenario planning does is better prepare one to *handle* unforeseen events, by encouraging the development of institutional and psychological agility and a maximally broad repertoire of adaptive behaviors which can be drawn upon in unanticipated situations. Cyberneticists talk of a “law of requisite variety” pursuant to which the larger the variety of actions available to a control system, the greater the range of perturbations that system will find it possible to handle without failure. In effect, scenario planning is designed to help build just such variety.) As coping strategies in the face of uncertainty about one’s future environment, such approaches do offer ways to help minimize hazards presented by the unpredictability that Complexity Theory teaches us to expect in environments characterized by pervasive nonlinearity and extreme sensitivities to initial conditions.

Complexity-based organizational theory has also suggested lessons for business organization and management – though not always ones that are easy to apply in practice. In Complexity terms, for instance, the “fitness” of a complex system in its environment is a function of a sort of *managed tension*, of success in hovering at some indefinable (and perhaps shifting) “sweet spot” of dynamic balance between “tight” and “loose” organizational “coupling.” According to Russ Marion, for example, fit systems operate at the “edge of chaos ... at a certain point between tightly coupled and loosely coupled.” Their coupling is loose enough that they can dissipate much of the impact of unwelcome or dangerous perturbations, because each component can absorb and neutralize small pieces of perturbation “because of the nature of the relationships among units (*e.g.*, redundancy, overlap) and because the individual units have excess resources.” At the same time, such organizations are tightly coupled enough that they are able to respond *adaptively* to change when this is needed – not least when so *directed* by organizational leadership. (If the coupling is *too* loose, a system can wind itself down into the organizational equivalent of heat death, a sort of dead stasis. If coupling is too tight, it can become dangerously rigid, unable to “resist unanticipated, potentially destructive perturbation” as disruptions cascade destructively through the system.)

A fit organization thus maintains itself at the point where its coupling is “sufficiently tight to allow the emergence of stable structures but sufficiently loose to allow flexibility and change.” It is “coupled at the Edge of Chaos where it risks dramatic cascading damage but reaps the benefit of maximum fitness in taking that risk.”² Business executives and other leaders, one assumes, should thus seek to keep their organizations in this “sweet spot” of maximally-adaptive middle-range coupling – though how this is to be done and where the optimal balance actually *is* would seem to be questions to which organizational theorists can

¹ Peter Schwartz, *The Art of the Long View* (New York: Doubleday, 1996), at 15 (emphasis added).

² Russ Marion, *The Edge of Organization: Chaos and Complexity Theories of Formal Social Systems* (Thousand Oaks, California: Sage Publications, 1999), at 162 & 167-69.

provide no *a priori* answers. (By definition, the right balance point will shift with changing circumstances, and from one organization and institutional mission to the next.)

Charles Perrow and others have also done important Complexity-infused work on the ways in which organizational failure can occur in complex systems, particularly where their shaping variables “follow different periodicity patterns and are highly coupled with each other.” In this understanding, “crises are more the result of complex, tightly coupled relationships than the outcome of inadequate human actions.”³ Such analysis has potential implications in a range of endeavors, including public policymaking.

Scott Sagan, for example, has applied such insights to the very specific peculiar public policy challenges of accident avoidance in nuclear weapons command-and-control (C²) architectures. Taking Perrow’s analysis as his conceptual starting point, Sagan has argued that the high interactive complexity and “tight” organizational “coupling” of modern U.S. and Russian nuclear C² systems make them highly accident-prone regardless of the intentions of their leaders and operators, and irrespective of the precautions such officials may take.⁴ (Some traditional approaches to reducing accident risks, he warns – such as increasing the use of redundant systems – may actually make things worse.⁵) From this foundation, Sagan has made a number of suggestions about how to reduce nuclear weapons accident dangers.⁶

More broadly, Leon Fuerth has suggested that Complexity insights can also teach us something about the *methods* by which public policy decisions are reached. Borrowing the term from Horst Rittel and Melvin Webber, Fuerth describes a public policy world increasingly beset by “wicked problems” – that is, the challenges of managing situations characterized by resolutely nonlinear dynamics, complicated positive and negative feedback loops, and a mind-bogglingly intricate interconnection of myriad variables. These, he says, are “a new order of ... public policy issues that reflect the axioms and postulates of complexity theory.” (Cyber-security issues, he contends, are one such arena of “wicked” policy challenge, but hardly the only one.) Policymaking in such an environment, Fuerth argues, requires a different approach than has usually been taken within governments. Such matters cannot be stovepiped as the responsibility of a single functional department or agency, he says, and instead may have to be addressed on a government-wide basis.⁷

³ R.A. Thiétart & B. Forgues, “Chaos Theory and Organization,” *Organization Science*, vol.6, no.1 (January-February 1995), at 19, 25.

⁴ See, e.g., Scott D. Sagan, *The Limits of Safety* (Princeton: Princeton University Press, 1991), at 32-36, & 39-46.

⁵ See Scott D. Sagan, “The Problem of Redundancy Problem: Why More Nuclear Security forces May Produce Less Nuclear Security,” *Risk Analysis*, vol. 24, no. 4 (2004), at 935, 936-38.

⁶ Interested readers can learn more about this issue, and see this author’s critique, in Christopher A. Ford, *Playing for Time on the Edge of the Apocalypse: Maximizing Decision Time for Nuclear Leaders* (Washington, D.C.: Hudson Institute, November 2010), available at <http://www.hudson.org/files/publications/Decision%20Time%20Final%20for%20Print.pdf>.

⁷ See Leon Fuerth, “Cyberpower from the Presidential Perspective,” in *Cyberpower and National Security* (Franklin D. Kramer, Stuart H. Starr, & Larry K. Wentz, eds.) (Washington, D.C.: National Defense University Press, 2009), at 557, 557 & 560-61.

We may also need different approaches to *who* it is who makes such decisions, insofar as there may be no single human capital “skill set” that is “optimal” for leading a response to such challenges. Addressing “wicked” public policy challenges may demand a variety of inputs and perspectives beyond that which normal functional specialization can provide. Theories of conceptual “requisite variety” have thus been offered in order to encourage decision-makers to seek input from as diverse a collection of cognitive perspectives as possible – thus arguably providing a more “scientific” basis for well-established managerial clichés about the need to be able to “think outside the box.”

In more specific applications, attempts have been made to use “non-linear dynamical models” as a way to understand terrorist networks – and from this starting point perhaps devise strategies for damaging such networks.⁸ Unsurprisingly, the seemingly nonlinear dynamics of the stock market have also been the subject of much study by economists and others who entertain hopes of better predicting or controlling it.⁹ Nevertheless, Complexity-inspired work in the public policy realm seems mostly to have remained descriptive and analytical.¹⁰ Scholars have worked hard to expand the subject areas in which “[c]haos has been confirmed by research.”¹¹ It is no doubt true that our understanding of many complicated issues has been improved by Complexity-based analyses. Complexity can help explain “the robustness of systems such as markets, cultures, and organizations like firms and political parties,” while “[t]he notion of a search across a rugged landscape” can help us better understand “ideas like innovation and political platform formation.”¹² That said, however, such understandings do not necessarily offer useful lessons for the policymaker.

It is not, of course, that descriptive studies have no policy implications. One might not have to look too far, for instance, to see policy implications in Alvin Saperstein’s fascinating attempt to evaluate the stability of two-player versus three-player strategic balances by assessing the supposed *Lyapunov coefficient* of such relationships – that is, the measurement of “the rate at which initially neighboring configurations drift apart as the model system evolves.” In the mathematics of complexity, a Lyapunov exponent is “linked to the amount of information available for prediction,”¹³ and a coefficient of less than zero implies predictability, because

⁸ See, e.g., Philip Vos Fellman, “The Complexity of Terrorist Networks,” School of Business, Southern New Hampshire University (undated), at 2 & 6; Michael F. Beech, “Observing Al Qaeda Through the Lens of Complexity Theory: Recommendations for the National Strategy to Defeat Terrorism,” *Center For Strategic Leadership Student Issue Paper*, vol. S04-01 (July 2004); Josh Brandoff et al. “Applying the Methods and Approaches of Complex Systems to Counter-terrorism,” *NECSI Summer School* manuscript (June 2008).

⁹ Michael McBurnett, “Complexity in the Evolution of Public Opinion,” in *Chaos Theory in the Social Sciences: Foundations and Applications* (L. Douglas Kiel & Euel Elliott, eds.) (Ann Arbor: University of Michigan Press, 1997), at 165, 193.

¹⁰ See, e.g., Ken Hatt, “Considering Complexity: Toward a Strategy for Non-Linear Analysis,” *Canadian Journal of Sociology*, vol. 34, no. 2 (2009), at 313, 314 n.2 (noting calls for a “postnormal sociology” that contrasts itself self-consciously to “‘normal’ (i.e., Newtonian) sociology” by focusing upon elements of “complexity and paradoxicality”).

¹¹ McBurnett, *supra*, at 193.

¹² John H. Miller & Scott E. Page, *Complex Adaptive Systems: An Introduction to Computational Models of Social Life* (Princeton, New Jersey: Princeton University Press, 2007), at 215-26, 222, & 225.

¹³ *Chaos Theory in the Social Sciences, supra*, from the introduction, at 9.

configurations starting close to each other will remain close over time. A positive coefficient, on the other hand, is “the signature of chaos or instability.”¹⁴

Saperstein’s attempt to suggest lessons for real-world geopolitics in these terms is highly abstract and stylized, relying, as it does, upon the assumption of hypothesized “confidence” and “fear and loathing” coefficients for an international relationship, which are then assumed to be keyed to arms procurement decisions. Nevertheless, his conclusion that tripolar relationships have a positive Lyapunov coefficient and are thus considerably more unpredictable and therefore unstable and dangerous than bipolar ones¹⁵ is interesting – and could be seen as providing a sort of mathematical underpinning for the common insight that the continued progress of nuclear weapons proliferation in adding “players” to the world of nuclear deterrence presents a grave threat to international peace and security. In policy terms, such conclusions should presumably reinforce our determination to enforce nonproliferation norms, and encourage us to bear even greater burdens and accept greater risks in order to forestall a world in which the number of near-peer global nuclear “players” is greater than two. (Saperstein’s Lyapunov analysis might also inject a cautionary note into contemporary disarmament debates, inasmuch as continued reductions by today’s two nuclear superpowers will presumably create a positive-Lyapunov situation – well prior to nuclear weapons abolition – when the number of near-peer nuclear players is considerably *greater* even than the three analyzed in his paper.) Saperstein has not, to my knowledge, attempted to tease out such specific policy lessons from these calculations. Nevertheless, it takes little imagination to see that it would likely be good policy to try to avoid high-Lyapunov situations in which “[t]here is no way of knowing – even approximately – the outcome of any policy or action, and hence major fluctuations may result from minor perturbations ... [creating the conditions] for crisis instability and war.”¹⁶

Robert Jervis has also attempted to apply Complexity insights to the field of high-level policymaking in the international arena. Though the examples he discusses are subtle and wide-ranging, however, he offers remarkably little that seems likely actually to be *useful* to most policymakers – little, that is, beyond the importance simply of being aware that one *does* operate within a complex system, that actions can have unanticipated effects, and that one can sometimes approach one’s goals indirectly and by multiple paths in order to reduce the risk of failure, adopting careful and cautious policies informed by the possibility of dangerous nonlinear consequences.¹⁷ The seeming thinness of such recommendations in a field accustomed to looking to deep thinkers for detailed policy guidance is probably not Jervis’ fault, however, for as we will see, Complexity Theory makes the very *idea* of policymaking notably problematic.

¹⁴ Alvin Saperstein, “The Prediction of Unpredictability: Applications of the New Paradigm of Chaos in Dynamical Systems to the Old Problem of the Stability of a System of Hostile Nations,” in *Chaos Theory in the Social Sciences*, *supra*, at 139, 152.

¹⁵ Saperstein, *supra*, at 155.

¹⁶ Alvin M. Saperstein, *Dynamic Modeling of the Onset of War* (Singapore: World Scientific Publishing, 1999) at 108.

¹⁷ See, e.g., Robert Jervis, *System Effects: Complexity in Political and Social Life* (Princeton, New Jersey: Princeton University Press, 1997), at 258-66.

III. *The Policymaker's Paradox*

One of the peculiar challenges of Complexity for the public policymaker – as opposed to, say, a biologist, computer scientist, chemist, mathematician, or even social scientist – is that the nonlinearity and unpredictability it posits as being fundamental characteristics of complex systems are profoundly subversive of how we have traditionally understood public policymaking. Complex adaptive systems are said to be highly sensitive to initial conditions, as well as potentially subject to a variety of both positive and negative feedback loops that act either to amplify or dampen the effect of exogenous perturbations. As a result, although the development of such systems is not *random*, it nonetheless essentially *entirely* unpredictable over the long term.

This fundamental unpredictability introduces great challenges for the public policymaker, because it seems to explode the very idea that the complex adaptive social systems of the human world may be purposefully manipulated in order to bring about specific desired situational outcomes. What is public policymaking about, after all, if not deliberately creating perturbations in the current state of affairs in order to produce a specific, desired situational outcome at some point in the future? Complexity insights may lend themselves well to innovations in the policymaking process whereby linear strategic planning paradigms are replaced by scenario-based approaches designed to maximize relevant decision-makers' repertoire of adaptively responsive behaviors with which to confront unpredicted systemic perturbations. Complexity may also help us improve nuclear C² systems, recognize the need to bring a wide range of institutional players together in addressing "wicked problems," understand the dangers of nuclear proliferation, and ascertain ways to impede the organizational effectiveness of terrorist adversaries. These are valuable things indeed. And of course there is wisdom, too, simply in *knowing* when one is facing a *really* hard challenge.

But Complexity would seem to provide great frustrations for anyone wishing to go further into affirmative, direction-focused policymaking, for it presents a difficult paradox. Even as Complexity seems to offer the potential for even very small policy inputs to bring about transformative change in a complex adaptive social system – the result of nonlinearity and positive feedback loops, in a kind of policy-world analogue to Edward Lorenz's famous "butterfly effect" – it also seems to suggest that *many* such deliberate perturbations are likely to have no significant impact at all. (Complex systems are often quite resilient, being able to absorb significant perturbations without undergoing system-transformative effects.)

Indeed, the extreme sensitivity of complex systems to initial conditions and the very potential for nonlinear feedback that makes it *possible* for small inputs to have dramatic effects also suggests that a policymaker will not be able to predict just *what* effects, if any, his intervention will have – or even whether they will be "good" or "bad." As has been said of complex systems more generally, their "sensitive dependence on initial conditions is profoundly disruptive of the ability to develop rational expectations, especially when any stochastic shocks are present,"¹⁸ and indeed Complexity Theory actually *denies* the possibility of long-term

¹⁸ J. Barkley Rosser, Jr., "Chaos Theory and Rationality in Economics," in *Chaos Theory in the Social Sciences*, *supra*, at 199, 211.

predictions.¹⁹ Systems as complex as human society are expected to be characterized by significant and irreducible uncertainties,²⁰ and if “[a]ny effort at long-term prediction in nonlinear systems is highly suspect” under the best of circumstances, it is surely “impossible to make long-term predictions concerning group interactions” in society.²¹

Complexity scholars have long recognized that applying its insights to the understanding of human systems offers us, in Ilya Prigogine’s words, “both hope and threat.” It offers “hope, since even small fluctuations may grow and change the overall structure,” but it also contains a sort of threat, “since in our universe the security of stable, permanent rules seems gone forever.”²² In Thad Brown’s delightful description, if it is true that “[t]he purpose of theory is to make nature stand still when our backs are turned, [as] Einstein reportedly said,” political scientists must confront the fact that “nature often laughs and dances around behind us.”²³ In this sense, complexity seems quite unkind to theorists.

From a policymaker’s perspective, however, the problem is more insidious than just teaching us lessons in impermanence and insecurity, or confounding our ability to articulate an explanatory model. Complexity is particularly subversive of policymaking because of its implications for our ability to *control* the world around us. If the animating idea of public policymaking is to apply effort and resources today in order to bring about a desired change in the future state of affairs, Complexity seems to subvert its very core. If Michael McBurnett is right, for instance, the opinion shifts associated with U.S. primary election campaigns have “a positive Lyapunov exponent,”²⁴ perhaps the most important thing this demonstrates is that they *cannot* be predicted. This sort of conclusion is very problematic for the policymaker, for as Saperstein has observed, “[t]he possibility of prediction implies the possibility of deliberate control.” “If prediction is not possible,” however, “there is no way of knowing the outcome of a given act or policy, which is synonymous with saying control doesn’t exist.”²⁵ And if, in turn, there is no control, what do we have policymakers for?

IV. *Responding to the Paradox: The Power of Ideas*

How might one respond to this predicament? Despair, of course, is one option. After losing money in the collapse of the infamous South Sea Bubble investment scheme, Sir Isaac Newton allegedly observed in frustration that “I can calculate the motions of heavenly bodies,

¹⁹ David L. Harvey & Michael Reed, “Social Science as the Study of Complex Systems,” in *Chaos Theory in the Social Sciences*, *supra*, at 295, 309.

²⁰ Hatt, *supra*, at 316 (citing S. Funtowicz, “Post-normal science – environmental policy under conditions of complexity” (1998), available at <http://www.nusapnet/sections.php?op=viewarticle&artid=13>); see also Christian Fuchs, “Social Information and Self-Organisation” in *Cybernetics and Systems 2002* (Robert Trappi, ed.) (Vienna: Austrian Society for Cybernetic Studies, 2002), at 225, 225.

²¹ *Chaos Theory in the Social Sciences*, *supra*, from the introduction, at 6 & 10.

²² Ilya Prigogine & I. Stengers, *Order out of chaos: Man’s new dialogue with nature* (New York: Bantam Books, 1984), at 312-13.

²³ Thad A. Brown, “Nonlinear Politics,” in *Chaos Theory in the Social Sciences*, *supra*, at 119, 136.

²⁴ McBurnett, *supra*, at 193.

²⁵ Saperstein, *supra*, at 145-46.

but not the madness of men.” If the human world of complex adaptive social systems is indeed fundamentally non-predictable and non-manipulable in any kind of deliberate way over the long term, is public policymaking in the end no more than a vain conceit – a sort of joke we play on ourselves rather than admit our powerlessness, or perhaps an outright fraud promulgated by those in positions of power in order to justify their existence?

Such despair seems premature, however, in part because we cannot be *entirely* sure how to translate lessons from Complexity Theory from the realm of mathematics and hard science into the world of human interactions. As a tentative response to Complexity’s seeming subversion of the policymaking paradigm, in fact, we might suspect it possible – without too much traducing our emerging understanding of Complexity in social science applications – that *some* types of policy input seem more likely to have significant effects upon operational behavior and long-term systemic patterns in the human world than others. We might also suspect that some of these inputs may indeed also operate in ways that are less stubbornly “unpredictable” than Complexity might at first seem to indicate.

The key point here is that human actors are *not* easily analogized to the constituent elements of most of the complex adaptive systems studied by Complexity scientists. Complexity thinkers have indeed been intrigued by the possibilities their insights might offer when applied to social systems. They are also often rightly concerned, however, that human organizations “cannot be totally assimilated to natural systems, where laws are immutable,” because the structure of a *human* system probably changes in special ways due to “the action of actors inside and outside the organization.”²⁶ In this vein, Complexity scholars have sometimes suggested that the very *humanity* of the unit-level components of a human social system may to some extent make the lessons of Complexity *themselves* somewhat unpredictable. David Harvey and Michael Reed, for instance, have noted “the ‘wild card’ nature of human beings and their innovative abilities” as a sort of potential “exceptionality ... in dissipative systems theory.” This does not necessarily mean that Complexity cannot be used in the study of social systems, but they stress that one must always be aware of the wild card and “recognize the indeterminate aspect of human nature.”²⁷

There seems, in fact, to be some debate not just about whether Complexity insights offer any real “tangible solutions” to the problems studied in the social sciences, but about whether Complexity can be applied there – *at all* – in anything more than a “metaphorical” fashion.²⁸ Peter Stewart, for instance, questions the possibility of applying Complexity analytically in the social sciences. He suspects that adequate analysis of complex phenomena cannot really be done there at all,²⁹ because “[s]ocial processes and phenomena are far too complex for complexity

²⁶ Thiétart & Forgues, *supra*, at 22.

²⁷ Harvey & Reed, *supra*, 306 (citing work of Roy Bhaskar).

²⁸ See, e.g., Terry Cooper, Juliet A. Musso, Nail Oztas, “The ‘New Sciences’ of Self-Organization: A Model for Implementation of Governance Reform,” unpublished manuscript (January 2003), at 10 (*citing* E.S. Overman, “The New Sciences of Administration: Chaos and Quantum Theory,” *Public Administration Review*, vol.56, no.5 (September/October 1996), at 487-491); see also *Chaos Theory in the Social Sciences*, *supra*, from the introduction, at 3 (noting that complexity applications in sociology “have tended toward metaphorical and post-modernist or poststructuralist usages”).

²⁹ See, e.g., the discussion offered by Ken Hatt, *supra*, 319.

theory to deal with, or profoundly elucidate,” and “complexity theories do not provide a particularly effective metatheory of social processes” in the first place.³⁰ Harvey and Reid appear more optimistic, but even they seem to think that merely metaphorical or impressionistic analyses may sometimes be all that one can bring to bear on human problems. In fact, they suggest the greater use of what they call “iconological modeling” – a “heavily intuitive” approach “rooted in a *pictorial method*, in visual correspondences rather than in deductive reasoning” and conventional methods of social scientific data collection and analysis.³¹

It is important to keep such concerns in mind when attempting to leap from the hard to the soft sciences, but it seems too early to give up. In fact, one might imagine there to be reason to believe that the policymaker’s paradox is not *quite* as debilitating as it might at first appear. Just *how* different human interactions are from those of molecules or the bundles of software code used in agent-based modeling, for instance, is no doubt a question on which experts will disagree. It would certainly seem to be true, however, that complex adaptive *social* systems – that is, the subset of complex adaptive systems the unit-level constituents of which happen to be sentient humans – are capable of responding to a type of input that no other complex system seems to be: *ideational* ones. Inputs at the level of conceptual organizing frameworks, narratives that structure people’s understandings and expectations of the world around them, seem to be important motivators for behavior in social systems and the political world.

As Robert Artigiani has noted, complex systems – including societies and idea-systems – have ways to police themselves in order to maintain a degree of stability as they dance at the “Edge of Chaos.” This he conceives as helping give rise to the phenomenon of purpose or *telos* in a self-organized system, and the need for systemic self-maintenance “exerts top-down constraints on how members perceive and react to the world and ... how the world responds to their actions.”³² It is in this fashion that “values, ethics, and morals” can be seen as helping “reprogram” behavior of individual humans in a system by mapping desired and undesired social states. Moral symbols stored in individual minds shape – though by no means rigidly determine – how individuals react in society.³³ Idea frameworks, therefore, can be important drivers for situational outcomes within complex adaptive social systems.

Just as importantly – especially if one is looking for some way to escape, or at least attenuate, the erosive impact of Complexity upon the very *possibility* of public policy – it must also be observed that ideational inputs clearly *can* be deliberately manipulated, for good or ill, by members of the policymaking community. If there are ways to escape or at least attenuate the policymaker’s paradox, one of them may lie along these lines. Perhaps the deliberate shaping of

³⁰ Peter Stewart, “Complexity Theories, Social Theory and the Question of Social Complexity,” *Philosophy of Social Sciences*, vol. 31, no. 3 (September 2001), at 323, 353.

³¹ Harvey & Reed, *supra*, 309-11 (emphasis in original); *see also, e.g.*, Brown, *supra*, at 135 (noting difficulties of bringing Complexity into social sciences on account of the resistance of complex systems to conventional data analysis).

³² Robert Artigiani, “History, Science and Meaning,” *Journal of Natural and Social Philosophy*, vol. 3, no. 1 (2007), available at <http://www.cosmosandhistory.org/index.php/journal/article/view/54/108>.

³³ Artigiani, *supra* (citing S.K. Langer *Mind: An Essay on Human Feeling*, vol. I (Baltimore: Johns Hopkins University Press 1967); S.K. Langer, *Mind: An Essay on Human Feeling*, vol. III (Baltimore: Johns Hopkins University Press, 1992)).

ideas offers us a chance to affect behavior within complex systems in ways that are not utterly unpredictable, at least to the extent that such inputs will tend to exert recognizable patterning influences over time.

This insight is, on one level, simply common sense. The units of a social system – human beings – are capable of purposive action motivated not merely by biological needs and raw emotions but by ideas: thought structures that shape their interpretation of the environment and evaluations of internal states, and which structure their responses to environmental conditions. The human units in a complex adaptive *social* system, in other words, exhibit a remarkable tendency to *act* upon ideas they have come to possess. These units also seem prone to act in ways that are, if not quite predictable, then at least *identifiably related to the substantive content of the ideas* they come to possess. One might thus suspect that interventions at the level of *idea-systems* – that is, policy inputs designed shape conceptual paradigms – offer at least *some* hope of deliberately achieving transformative effects in a complex adaptive social system.

V. *Policymaking as Memetic Engineering?*

Is there some way more sharply to conceptualize this in terms that make sense through the lens of Complexity? One might speculate, perhaps – borrowing from the somewhat arcane calculations of Complexity Theory in its “harder” applications – that conceptual paradigms are *themselves* a bit like “attractors” in the mathematical “space” of complex adaptive social systems. By this view, specific mental frameworks “drain basins of attraction” in idea-space in such a way as to explain the tenacity with which such frameworks can persist over time, and why they are sometimes so good at surviving (or co-opting) attempts to change them. By the same token, however, it may be possible, from time to time, for a social system to undergo a phase transformation through the introduction of a *new* attractor, with the system quickly moving into the alternative “basin” that is “drained” by this new concept, and thereafter enjoying a new (dynamic) stability within *that* particular idea-neighborhood. This is perhaps an overly complicated way of expressing the simple thought that ideas matter, that some ideas are stubbornly resistant to change, and yet that from time to time a new concept can catch on like wildfire, transforming the social environment around it. It may nonetheless be true: a reformulation of the propagandist’s ancient truth that ideologies can be potent tools with which to try to reshape the world.

An alternative and perhaps slightly less abstruse window into the potential power of ideational interventions might come through the concept of what Complexity theorist Russ Marion, for one, has called *memetics*. This notion is based upon the idea – first articulated by Richard Dawkins,³⁴ and subsequently picked up by E.O. Wilson³⁵ and others – that there may exist structured and semi-autonomous “genetic” units of culture that compete with each other for “reproductive” success within human minds. Memetics is a concept-based analogue to genetic evolutionary theory that builds upon Dawkins’ neologism of the “meme,” a conceptual unit of

³⁴ See, e.g., Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 2006) (originally published in 1976).

³⁵ See, e.g., E.O. Wilson, *Consilience: The Unity of Knowledge* (New York: Vintage Books, 1999).

culture that shapes decisional behavior in conscious actors and which has a specific information content that can be transferred through mimicry, interaction, and teaching.

Memetics would surely make little sense as a way of understanding systems that did not consist of conscious, willful human actors. But as a way of understanding complex adaptive *social* systems – which is precisely what we need to do if we are to bring Complexity with us as we make the leap from hard science to the human world – there are surely worse ways of conceptualizing the problem than to see systems as being potentially subject to transformative effects as a result of competitive and recombinative meme dynamics. And from this insight, if indeed it proves a valid one, it is but a short step to imagine policymaking aspiring to *affect* the paradigmatic “memotypes” of the social system – that is, to deliberately alter (or alternatively, better cement in place) the conceptual frameworks upon which human decisions are based as people evaluate their environment, determine what they wish to see happen, and apply themselves in myriad disaggregated ways to whatever tasks they perceive to be most immediately at hand.

A Complexity-informed approach to public policymaking, therefore, might be supposed to require a twofold focus. First, acting upon the important insights into coping with nonlinearity that have been gaining traction in the private sector for years, public policymaking would acknowledge its responsibility to help prepare the ship of state not just for what an extrapolation from current trends suggests may occur in the future, but also for *non*-anticipated perturbations. Such a “Black Swan” sensibility – to borrow from Nassim Nicholas Taleb’s popularization³⁶ – would seek to maximize the system’s ability to deal with sudden shocks of either the positive or negative variety, equipping it as well as possible for agility and responsiveness in taking advantage of whatever opportunities, and coping with whatever calamities, fortune may bring. This aspect of public policy is less about determining *where* to lead the polity than preparing it for resilience and flexibility in the face of the unforeseen.

Building upon the idea of purposive ideational input as a potentially system-transforming perturbation, however, the Complexity-informed policymaker may *also* need to devote time and attention to the realm of ideas as a source of general direction and behavior-shaping guidance for the socio-political system. One must not only make the “right” choices – with an open-eyed understanding of what *little* this may mean when trying to steer highly nonlinear complex adaptive social systems toward specific desired situational outcomes – but one must *ground* them in compelling ways and equip this grounding to compete successfully with rival visions. This might involve: articulating and working to build support for the conceptual foundations of policy choices; promoting broad understandings of socio-political goals and values that help animate decision-making by the diverse actors within the system, such as by providing them with a coherent repertoire of policy-relevant “instincts”; working to *undermine* the legitimacy and perceived conceptual coherence of competing visions; and always being alive to the conceptual undercurrents beneath the surface of essentially *all* policy choices, and the ways in which such ebbs and flows can have a powerful momentum and impact all their own. Just as Machiavelli

³⁶ See Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable* (New York: Random House, 2007).

once pronounced himself more awed by the founder of a religion than of a state,³⁷ the Complexity-informed policymaker may wish systematically to devote attention to shaping the world of ideas in the broadest and deepest sense.

In this sense, the practical applications of public policymaking tend to shade into public diplomacy, intellectual vision-brokering, or even propaganda. This is not really news to true statesmen, however, for the most accomplished practitioners have always understood their work to be as much art as science, and as much about persuasive alchemy as anything resembling an exercise in precision engineering by scientifically-informed experts or policy “czars.” It is nonetheless useful to recognize the ways in which Complexity Theory seems to reinforce such wisdom, lest we forget it in the hubris of our technocratic conceit. There is rich irony, of course, in having the *science* of Complexity teach us that there may be sharp *limits* to the utility of “science” as a guide to decision-making in the human world, but we should perhaps take our lessons where we can.

VI. *A Case Study: South African Racial Ideology*

The political world, after all, seems to offer many examples of how ideas shape decision-making, how such concepts are sometimes purposefully manipulated, and yet how they can also come to acquire considerable power in shaping actors’ behavior and acquiring a sort of cognitive “momentum” of their own – in which particular thrusts and themes propagate themselves both laterally (“catching on” among greater numbers of people) and forward in time, maintaining a recognizable “family” resemblance even while changing in response to circumstances. Indeed, one might perhaps imagine cognitive frameworks and socio-political ideologies as being complex adaptive meme-systems that *themselves* function in some of the ways Complexity-derived organizational theories might expect.

A “fit” cognitive framework, in other words, might be understood to thrive “on the Edge of Chaos” by being tightly coupled enough that its conceptual elements provide, in a single “package,” a coherent way for adherents to understand and cope with the principal challenges presented by their socio-political environment, yet without proving so rigid and doctrinaire that the schema crumbles upon encountering the first perturbation not foreseen by, or intelligible within, its frame of reference. Fit thought-systems are loosely-coupled enough that they can “explain” and accommodate a good deal of circumstantial caprice without suffering a catastrophic collapse of legitimacy or coherence, but they yet manage to hang together in a form recognizable by their adherents (and third parties) as being the “same” framework over time.

One fascinating example of these dynamics – an illustration I take from my own work as a graduate student years ago – can be found in the odd history of the old and now long-discredited ideology of racial “separate development” propounded for decades by the White minority government of the Republic of South Africa. This ideology of “separate development”

³⁷ Niccolò Machiavelli, *The Discourses on Livy* (Ninian Hill Thompson, trans.) (Stilwell, Kansas: Digireads.com Publishing, 2008) at Ch.X, at 27 (“Of all those who are praised they are praised the most, who are the authors and founders of religions. After whom come the founders of kingdoms and commonwealths.”).

was the intellectual foundation for the cruel system of racial *apartheid* practiced there prior to that country's long-awaited transfer of power to a government democratically elected by universal franchise. "Separate development" is not hard to evaluate in moral terms, and indeed the *apartheid* system it spawned was almost unanimously condemned as immoral and unjust around the world. As an analytical matter, however – as a study in memetics, if you will – its development and evolution as an intellectual organizing and justificatory scheme for the South African political system is a fascinatingly subtle tale both of the manipulability of ideas *and* of their persistent cognitive "inertia" over time.

South Africa was a country all too sadly familiar with the politics of racial inequality long before the National Party won power within its White-run political system in 1948. The "Nats," however, brought with them into government a special focus upon racial identity politics, having developed out of, and in conjunction with, a powerful nationalist movement among White speakers of Afrikaans – a local dialect preserved among Dutch-descended Whites living in the region since Dutch colonization of the Cape of Good Hope in the 17th Century. This emergent "Afrikaner" nationalism opposed itself to the interests of a White Anglophone elite closely tied to the British Empire of which South Africa had become a part in the early 19th Century, and its electoral triumph in 1948 represented an important change within the hothouse of White South African political culture.

Neither the Afrikaner nationalists nor the Anglophone community, however, offered very much to the country's majority nonwhite population – which included, in the local terminology of the era, a black (that is, "African" or "Bantu") population divided into a number of linguistic sub-groups, a group of "Indian" persons descended from migrants who arrived from South Asian under the British, and a group of "Colored" persons of mixed White, black, and Khoisan (a.k.a. "Bushman" or "Hottentot") ancestry. The White minority that ruled South Africa may have been internally divided and at political daggerpoint in the midcentury political competition between Afrikaner and Anglophone, but neither the descendants of British nor Dutch colonists had much interest in ceding power to persons of color.

Thus it was that the Nationalist victory in 1948 seemed to have few implications for nonwhites. Neither White sub-community then envisioned anything other than continued minority rule over a more or less unitary South Africa. (The British had established a series of "native reserves" for Africans in the 19th Century, but there was no question of their ever achieving independence.) One could debate the details of precisely how harsh each group's policies would be toward nonwhites, but the bottom line remained essentially the same: a single state run by, and for, a racial group constituting a small minority of the population.

But the world was changing fast for South Africa, as for other members of the postwar British Commonwealth. The era of decolonization was beginning, and with it, starting with the independence of Ghana in 1957, a period in which colonial overlords were rapidly being replaced by black-majority governments throughout much of Sub-Saharan Africa. South Africa – a country run by a racial minority, but with Whites being a substantially larger proportion of the population than was the case for the tiny White settler populations elsewhere on the continent – began to worry about its fate. By the time British Prime Minister Harold MacMillan gave his famous "wind of change" speech in Cape Town in February 1960 – a year in which South Africa

began to experience significant black unrest, with the infamous Sharpeville Massacre taking place the very next month – the pressure had built to a fever pitch.

Enter Hendrik Verwoerd, an Afrikaner Nationalist politician who had recently become South Africa's prime minister, and who was determined to push back against the seeming inevitability of majority-rule decolonization by offering a counter-narrative that would permit the continuation of some form of White minority rule. To him, more than anyone else, the world owes the political ideology of "separate development" and the peculiar form of the "high *apartheid*" state as it developed in subsequent years, for this new meme-system was his riposte to the ideology of post-colonial self-determination on the basis of majority rule.

Fascinatingly, however, Verwoerd did not invent the idea. In fact, it had been developed some years earlier by a group of Afrikaans intellectuals generally associated with the prestigious university at Stellenbosch, and was articulated most clearly in the report of a government commission headed by F.R. Tomlinson first published in 1954. (A more complete version was published in 1956.) In some respects, this group had *itself* aspired to offer a more humane and progressive intellectual counter-narrative to the prevailing ideology – and terrible harshness – of White minority rule in South Africa. Coming out of an Afrikaner nationalist tradition powerfully attracted to racial group identity as the relevant sort of "self" to be given "self-determination," however, these intellectuals could not bring themselves to accept universal franchise within South Africa as it then existed, for they assumed that such an answer would lead to the political *oppression* of the minority.

Conceiving of politics not principally as an arena with individual humans as its constituent units, but rather as a system of interacting *groups* each with their own rights, these Afrikaners felt majority rule would deny *their* group's right, as a political "self," to run its own affairs. Determined to alleviate at least some of the harsh inequalities of White minority rule, however – which they *also* came to view as a form of political oppression, for *no* group could with justice rule over another – the Stellenbosch group articulated a new idea in which racial groups would *all* develop "separately." In this vision, a South Africa that had been previously organized as a unitary state would evolve into something more akin to a confederation – a patchwork quilt of ethnic sub-polities, with resources parceled out between them in such a way as to ensure that every constituent unit was viable on its own.

When this ideal of "separate development" was first articulated in 1954, it was offered as what purported to be a more humane *alternative* to the system of minority domination then being so enthusiastically enforced by the post-1948 National Party government. (The Tomlinson Commission, for instance, advocated that more land be given to the "Bantu" homelands, that land tenure reform be enacted so that blacks could own and sell land, that business partnerships be permitted between blacks and Whites, and more be done to develop industry in "native" areas and adjacent "South African" territories.) It was certainly seen as such, at any rate, and the country's Minister for Native Affairs – none other, remarkably, than Hendrik Verwoerd in an earlier political incarnation – rejected the idea out of hand. Under no circumstances, he made clear, would the National Party countenance *dividing up* South Africa in order to share it with the "natives." He would tolerate, he made clear, no dilution of more traditional notions of *baaskap*: the superior-inferior relationship of racial subjugation.

But what was anathema to Verwoerd in the mid-1950s apparently seemed more attractive after MacMillan's "wind of change" had begun to howl down from the north. In what it is hard to imagine being anything other than a cynical and propagandistic ploy, Verwoerd in 1960 – now as Prime Minister – began to seize upon the "separate development" ideal as a way to reject foreign (and domestic) calls for majority rule within a unitary South Africa. Separate development offered him a way to articulate this opposition in a discourse that did not require simply *rejecting* the ideology of self-determination and political rights. Instead, he could use separate development to *oppose* majoritarian politics while yet claiming *fidelity* to the ideal of democratic self-determination, which in its "truest" form was now said to require the avoidance "majority domination" of *any* group over any other group. Verwoerd and his successors clearly had no interest whatsoever in building "separately developing" racial sub-states into *genuinely* viable proto-states, but they were delighted to appropriate a concept that allowed them to argue against majoritarianism by using its *own* language of rights and political justice.

But what seems to have begun in Verwoerd's cynical intellectual opportunism was powerfully internalized and acquired enormous self-persuasive power within the Afrikaner political elite that dominated South Africa until the end of the *apartheid* system in the 1990s. In the ensuing years, the National Party government proved enormously attached to the idea, not merely as a rhetorical trope – a sort of propagandistic debating point – but indeed as a guide for transforming South African politics. Separate development became the conceptual fountainhead for the government's creation of a series of tribal "homelands" for the country's African peoples (*e.g.*, Ndebele, Swazi, South Sotho, Tswana, Venda, Xhosa, and Zulu). Each "homeland," or "Bantustan" as they were sometimes called in the early years, was said to be an exercise in "national self-determination," and to be destined for independence. (Bophutatswana, Ciskei, Transkei, and Venda in fact, were eventually *given* what officials in Pretoria called "independence," though this was not recognized internationally and these territories remained in practice under South Africa's thumb.) Separate development – at least as interpreted by the National Party, which remained consistently uninterested in allowing the homelands anything like the kind of resource base that would have been necessary for a viable independent existence – became the organizing principle for the entire political system. Even the adjacent country of Namibia, which had been put under South African control after the First World War pursuant to a League of Nations mandate, was reorganized along separate development lines in the 1960s.

What seems to have begun in the opportunist co-optation of an arguably well-meant idea thus came to be grasped with powerful intensity by National Party (NP) politicians, particularly under Verwoerd's successor, John Vorster, who fixated upon the idea with a remarkable intensity. (Verwoerd was killed by a deranged assassin in 1966.) So attached were the NP ideologists of the Vorster cabinet to separate development, in fact, that his apparently sincere belief in its merits as the ideal political solution to the post-colonial ethnic conflicts of the continent helped make him willing to turn against the White-minority Rhodesian government of Ian Smith in the late 1970s – a regime which practiced a kind of group (*i.e.*, White) domination within a unitary state that separate development theory required South African Nationalists to condemn in principle. For some time in the early 1970s, in fact, the Vorster government embarked upon an "outward policy" of diplomatic outreach effort to black-ruled post-colonial African governments, apparently quite convinced that if only African leaders *understood* the

virtues of separate development they would abandon their oft-expressed enmity toward the *apartheid* state. (Needless to say, this did not work.)

The very intensity with which the National Party seems to have internalized Verwoerd's appropriated schema, however, led to some problems, for there were at least two groups in South Africa that did not seem to fit the "homeland" model. This began to emerge as a major conundrum precisely *because* consistency with separate development theory had been made into a critical element of the government's self-perceived political legitimacy. Nationalist ideologists claimed that with the "homelands" they had decreed for the country's black African population, they were simply permitting these tribal groups to develop on their own in their own traditional territory. This argument, however – and the territorially-focused group-political ideal upon which it was built – could not coherently be applied to South Africa's so-called "Coloured" population of mixed-race persons, nor to its "Indian" population of South Asian ancestry.

Coloureds could not easily be said to have a group-specific traditional "homeland" within this scheme because of their mixed descent, while Indians' "homeland" was thousands of miles away and their outright expulsion seemed entirely impracticable. If the National Party had cared less about the ideological demands of separate development theory, the existence of these two groups might have been less troubling, but as things were, the issue came to be a significant focus of political debate within Nationalist circles in the 1970s.

The question of ideological consistency these groups presented was acute. If Coloureds and Indians could not be given "homelands" as the National Party intended for black Africans, what was to be done with them? It seemed out of the question that the *idea* of group-based group politics should be abandoned, for this was the central theme of Nationalist theory. This meant, however, that each group had somehow to be accommodated *as a group*. The only way to do this with Coloureds and Indians, however, was to abandon the principle of territoriality and permit these two groups officially to *share* political power with some other group – to wit, Whites.

The South Africans began to experiment with race-group power-sharing in Namibia – then known to South Africans as South-West Africa – through the so-called Turnhalle conference, a process set up with Vorster's blessing in 1973 with the establishment of a multi-racial "Advisory Council" there. By the end of 1976, the Turnhalle process had proposed the establishment in Namibia of a system of ethnic homelands federated within a unitary state. This critical ideological step was defended in South Africa in part on the grounds that Namibia had a special "international status," but the implications for South Africa were obvious – and indeed, Vorster himself declared in 1977 that Coloureds and Indians should somehow be brought into South African politics. Actual agreement upon how to do this, however, could not then be reached. (Vorster himself got no further than offering Coloureds some "consultative" seats on an advisory Cabinet Council in 1976.)

The Vorster government could never quite cross the conceptual bridge of power-sharing at home in South Africa where it mattered most, for there seemed no way to be *entirely* faithful to all elements of the separate development ideal as it had been articulated vis-à-vis Africans, but

National Party ideologists keenly perceived the dilemma. Vorster's successor P.W. Botha, however, proved more flexible.

Botha's flexibility, however, was not a result of his being less ideological. He simply prioritized a *different* organizing principle: national mobilization against communism. As Vorster's Defense Minister, Botha had become fixated upon the idea that South Africa was beset by what he and his Defense Ministry colleagues came to term a "total onslaught" of coordinated communist aggression, masterminded by Moscow and involving a coalition of "national liberation movements" and post-colonial Marxist regimes to the north. After he succeeded to the premiership in 1978 (and ascended to a new executive presidency in 1984) Botha – who also hailed from a more liberal Cape faction of the National Party less obsessed by separate development orthodoxy than had been Vorster – put his emphasis upon developing a "total national strategy" of anticommunist resistance appropriate in scope and intensity to the onslaught he assumed his country to face. In *his* ideological vision, the priority was to make South Africa into a kind of fortress; if political accommodation with Indians and Coloureds could help co-opt them into National Party allies, that was a price well worth paying. Conceiving the anti-communist struggle as a political and ideological one, Botha-era officials even spoke of the need to build up a black "middle class" with whom to cooperate against communism.

This security-focused flexibility – which tended to prize resistance to the presumed communist onslaught over adherence to any *particular* group-political dispensation as long as the National Party government remained in the national driver's seat – allowed Botha to cross one of the ideological bridges that the Vorster cabinet had found itself unable quite to accept, strung as it was between the apparently increasingly incompatible ideological imperatives of group-based politics and group-territorial political organization.

Botha, in a word, chose to abandon separate territoriality, and under his administration the National Party endorsed a system of power-sharing, on a group basis, within a unitary state. In this tricameral system – the basic outlines of which had been endorsed by a government commission in 1980 – separate houses of parliament were established in 1983 for Whites, Coloureds, and Indians as a way of sharing legislative power within South Africa. By no coincidence, the balance of parliamentary voting strength just happened to work out in such a way that a majority in the White house could have its way even if majorities of the Coloured and Indian houses disagreed, thus preserving White rule in a functional sense even though power was now notionally to be "shared." Nevertheless, in ideological terms this system of "*tripartheid*" represented an enormous change.

(Just how significant these changes were in ideological terms may be seen, in part, by the venom which accompanied the departure from the National Party of a large group of prominent Vorster-era Nationalist politicians. These men regarded Botha's changes as an outrage, and formed a new Conservative Party, for a time gaining such political strength that they displaced the liberal White anti-*apartheid* Progressive Federal Party as the official opposition within the White house of parliament. This period also saw the growth of a territorially-focused right-wing Afrikaner separatism, the most extreme representative of which was the *Afrikaner Weerstandsbeweging* [Afrikaner Resistance Movement, or AWB] headed by the aptly named Eugene Terreblanche, which sought to preserve *pure* separate development theory by the

expedient of carving out an independent *Afrikaner* homeland – a *Boeristan*, if you will – which would vindicate, without compromise, both the principle of groupism *and* the principle of separate territoriality. Territorialism remained a strong focus of the Conservatives too, who at one point suggested creating a Coloured “homeland” of discontinuous territories. Some Conservative Party extremists even muttered about sending Indians “back to India.”)

After this point, one might say, all that really remained of separate development in National Party circles was the principle of group-based politics: territorial separation was obviously not absolutely necessary. And indeed, by the late 1980s it was becoming clear that even though officials sometimes tried to explain how Africans were “different” from Coloureds and Indians in some way that made their own representation unnecessary or impossible, the remaining black “homelands” still within South Africa would now *not* ultimately become independent. The day-to-day political exigencies of the National Party’s parliamentary squabbles with the Conservative Party in the mid-1980s, in fact, encouraged lines of argument that framed their dispute over tricameralism in moral terms, articulating an idea of the Conservatives as racial oppressors opposed to the simple justice of power-sharing. Such arguments of basic justice did not obviously stop at any particular racial line, however, and soon one began to hear Nationalist MPs speaking vaguely but portentously of Africans as persons with “civil rights” too. Nationalist theoreticians had begun to scramble for ways to accommodate *black* South Africans within some system of “power-sharing” without turning the country entirely over to majoritarian post-colonial rule of the sort that was by then ubiquitous beyond the Limpopo River, across South Africa’s northern frontier.

In a sense, the final straw could be said to have come when the basis even for P.W. Botha’s anti-communist ideological vision evaporated, for these domestic changes – the shift from the Verwoerd/Vorster-era “high separate development” that aspired to territorial separation to Botha-era group-based power-sharing within a unitary state – were soon followed by the erosion of “total onslaught” thinking too. With the advent of Soviet Premier Mikhail Gorbachev’s policies of *perestroika* and *glasnost*, and then with the collapse of Soviet power and the dismemberment of the USSR itself in 1991, it no longer became possible to see South Africa as being menaced by any kind of Soviet-orchestrated conspiracy. And with this change, in turn, there remained remarkably little left to fight over with regard to South Africa’s future.

To be sure, the end of the *apartheid* state with the elections of 1994 and the establishment of a new constitution did represent the final disappearance of that last remnant of separate development ideology: the ideal of a political system based upon “group rights,” in which individual political rights were exercised within the parameters of group identity, and these groups themselves were the most important political actors. This was a very significant step for the National Party to accept. From a White perspective, however, the transition to a system of more purely individual rights may by *that* point have been more theoretical than real.

Arguably, no system modeled after the group-based multicameralism of the early 1980s would have done more than individual rights to safeguard Whites’ perceived interests. It had been possible to rationalize the domination of the White house of parliament over the Indian and Coloured houses because White politicians represented a population larger than that of the other two tricameralist groups combined. Because black Africans constituted some 80 percent of the

overall South African population, however, a *black* house of parliament would have dominated a four-chambered system even more absolutely. (No serious thought seems to have been given to trying to set up *separate* chambers for each African group previously allocated a “homeland,” and in any event the chambers would still have been able to exert their populations’ collective numerical weight by acting together – an option not so useful to Indians and Coloreds under the tricameral dispensation because of their small numbers.)

Once the principle of power-sharing within a unitary state had been accepted – itself a concession made necessary in part by separate development’s struggle with groups that did not fit well into its theory – the bald fact of population ratios was essentially impossible to escape. And once National Party ideologists had accepted the principle of power-sharing with the African majority within a unitary state, the fact that *this* (majority!) group opposed the persistence of *any* group-based model of political power pretty much decided things.

Particularly with the country no longer seeming to face an organized communist “onslaught,” the time had apparently come to shift the locus of the most important rights-bearing entity from that of the racial or ethnic “group” to that of the individual person. With its last gasp, therefore, separate development theory withered away into an acceptance of rights-based political liberalism. All that was left of the National Party’s great ideological project was this endgame of securing a system of strong constitutional protections for individual rights – a political program no less focused than before upon forestalling the development in South Africa of one of the majoritarian one-party tyrannies so common elsewhere on the continent, but which had now lost its groupist National Party distinctiveness. In the end, the answer to the challenge of Harold MacMillan’s “wind of change” was not anything to do with group “separateness” but rather a more American-style constitutionalism emphasizing individual rights.

VII. *The Dynamics of Complex Meme Systems*

The long, strange odyssey of separate development theory offers us a rich example the power of ideas. As one can see in Hendrick Verwoerd’s co-optation of “separate development” theory, political ideologies are clearly highly manipulable, for good or for ill, by political leaders. Yet they also seem capable of bewitching political actors, and of functioning over time as tenacious shapers of behavior, with the result that policy choices can tend over time to exhibit patterns clearly traceable to the structuring and organizing principles of the conceptual framework. At the same time, the example of separate development demonstrates that idea systems can come to face internal contradictions or tensions as they struggle to reach a point of organizational “fitness” by accommodating exogenous reality *enough* to remain relevant and legitimate in the eyes of their adherents, yet without doing so in ways that forfeit their coherence and conceptual distinctiveness.

Memetic inheritance can apparently be a powerful force, yet some of this power comes – as in the biological genetics from which the meme of memetics is itself derived – more from the ability to demonstrate a legitimate conceptual *lineage*, as it were, than from utter consistency. Ideas have “momentum” that allows them to carry characteristic patterns and themes forward through time, even in the face of considerable change. (Some such change, in fact, can occur

precisely *because* of this conceptual inertia, for elements *within* an ideological system can come to exist in tension with each other, driving the system in new directions as participants seek to resolve its contradictions or escape its paradoxes.) And while ideological systems can sometimes absorb considerable perturbations, they can also reach the point at which the entire system disaggregates – thus permitting the crystallization of a new order around a *different* organizing concept.

Much of this can be seen in the history of separate development, which one might describe as a complex adaptive *memetic* system (CAMS). It was precisely because National Party ideologists *did* believe in separate development that they found it necessary to engage in the conceptual debates that led to tricameralism. “*Tripartment*” became a political reality, however, in part because “total onslaught” thinking developed in some sense as a *competitor* to separate development as the principal organizing principle for the South African state – thus permitting P.W. Botha’s opportunistic openness to Coloured and Indian co-optation to join forces with those Nationalist ideologists who saw power-sharing as the way out of the conceptual dilemma of territorially-focused groupism. And it was precisely because National Party thinkers *did* come to accept power-sharing as the natural and inevitable product of *fidelity* to separate development in South Africa’s peculiar demographic context, that they were more able to expand the “group rights” concept to black Africans – which then, in turn, set the stage for separate development’s final collapse and replacement by a constitutionalism based on *individual* rights.

As with other complex adaptive systems, the CAMS of separate development seems to have survived for some time precisely because it was ordered and structured in distinctive ways that made it attractive to its host population of Afrikaner politicians and voters, yet it was able to evolve over time both as a result of deliberate choices by key actors and as a result of its own internal dynamics and tensions. This is consistent, for instance, with what organizational theorists informed by Complexity have seen in the phenomenon of entrepreneurship, which is envisioned as a form of structured and deliberate *instability* vital to the self-renewal and survival of an organization (or any other complex system) in new forms of order, but which must nonetheless be coupled with a degree of certainty and predictability so that it avoids the disorder of outright chaos.³⁸ The perpetuation of memetic themes forward through time in progressive variations, each differing but nonetheless recognizable as part of the same conceptual “genealogy,” recalls Robert Artigiani’s point that in social systems operating on the edge of chaos, survival does not call for “stability” as much as “evolvability.”³⁹

There could be any number of engines that drive the memotypical variation that results in such evolution. Purposeful and self-conscious ideological entrepreneurship can certainly be one, as we have seen with the example of Verwoerd’s appropriation of the original formulation of separate development articulated in the Tomlinson Commission’s report. This is most akin to the sort of systemic change idealized by organizational theorists who seek to identify ways for corporate leaders deliberately to cultivate a sort of instability as a way of developing “a repertory of responses to environmental demand.”⁴⁰ Such instability makes systems “peripatetic in the

³⁸ Thiétart & Forgues, *supra*, at 23 (citing R.T. Pascale, *Managing on the Edge* (London: Penguin Books, 1990)), 24, & 28.

³⁹ Artigiani, *supra*.

⁴⁰ Thiétart & Forgues, *supra*, at 23.

sense that they constantly seek new organizational states” in their effort to survive over time in a changing environment.⁴¹

Alternatively, a CAMS might be discovered to have its own internal contradictions. Artigiani suggests, in fact, that Gödel’s Theorem may indicate that some internal contradictions of some sort are unavoidable for any system claiming to have theorems and axioms that are logically consistent.⁴² In the language of formal mathematics, an axiomatic system is said to be *consistent* if the operation of its rules can never produce two mutually-contradictory statements. Gödel tells us, however, that a consistent system will necessarily be *incomplete*, in that it will contain true propositions that cannot be reached by proceeding from the axioms according to the system’s rules for deriving propositions. The price of being complete is apparently inconsistency; and the price of consistency is incompleteness.

If something as formalized as Gödel’s Theorem can be applied in the memetic realm, at least by analogy, it may be that every ideology will possess conceptual holes (incompleteness) or contradictions (inconsistency) with which its adherents will have to struggle at one point or another. This provides another source of memetic variation or divergence, and a driving force for evolution over time. And indeed this may be what we see in separate development’s struggle to assimilate Indian and Coloured identity in South Africa, which created a tension between the sub-themes of group politics and territorialism and led to a split in the conceptual family tree of National Party ideology between Botha’s experiment in group power-sharing and the more territorially-minded splinter faction that abandoned the National Party for the Conservative Party and the *Afrikaner Weerstandsbeweging*.

Whatever the mechanism, however, one might expect from Complexity Theory that even though a CAMS evolves over time, it will often tend to exhibit characteristic “family” patterns and maintain distinctive conceptual themes over time. Gianfranco Poggi and Robert Artigiani may be right that societies are most likely to evolve successfully when they are not tied inescapably to sets of transcendent, timeless ideological rules, because such inflexibility will likely prove maladaptive in the face of unexpected perturbations.⁴³ Nevertheless, survival on the “Edge of Chaos” does not reward *unlimited* flexibility. A degree of structure and consistency are also needed, and must be maintained in some dynamic balance with a system’s peripatetic search for environmentally-adaptive phenotypical variations, which returns us to the koan of *order-within-disorder* and *disorder-within-order*.

In terms of Complexity Theory, both stability *and* explosive instability are each a kind of equilibrium. But the fitness of a complex system on the “Edge of Chaos” is not about equilibrium in the normal sense, but about managed tension – a sort of dance. Dissipative systems, it is said, are characterized by their ability to remain far from equilibrium, in a sort of

⁴¹ Harvey & Reed, *supra*, at 303.

⁴² Artigiani, *supra*.

⁴³ *Id.* (citing Gianfranco Poggi *The Development of the Modern State* (Berkeley: University of California Press, 1978); Gianfranco Poggi, *Calvinism and the Capitalist Spirit* (Amherst: University of Massachusetts, 1983); & G. Vattimo, *The End of Modernity* (Baltimore: Johns Hopkins University Press, 1988)).

“dynamic tension between their ability to accumulate negentropy [negative entropy] and their need to transfer their positive entropy to the environment. If they can sustain this tension, then under proper circumstances they can achieve a state of *net negative entropy* and persist.”⁴⁴

It is in the recurring patterns of a particular mode of sustaining this dynamic tension – a particular dance, if you will – that one may be able to see a conceptual “family resemblance” between a system’s states in a time series. This is Complexity’s order within disorder, for as we have already discussed, dynamical systems seem to tend to organize themselves around what David Ruelle called “strange attractors.” Behavior within an attractor’s “space” can be highly unpredictable, but the system nonetheless tends to *return* to this space repeatedly. The attractor thus creates an “envelope” for feasible behavior, such that the system is able to absorb many perturbations without deviating fundamentally from a fundamental pattern.⁴⁵ From time to time a perturbation may come along that causes the entire system to undergo a transformation, jumping into the “space” of a *new* attractor that might be said to represent an alternative “family” of dynamical answers, but complex systems can show a remarkable degree of consistency over time. This has important implications when applying Complexity insights to meme systems.

For a complex memetic system, it is this consistency which enables us to speak of ideological inertia or momentum – as we have seen in the persistence of territorial self-determination and group-political themes in the development of National Party *apartheid* theory in South Africa, and their tendency to shape particular patterns of political behavior. Indeed, one might say that it was precisely the coincidence and intertwining of these two memes that *constituted* separate development theory. Separate development was born when they came to be wrapped together in Afrikaner nationalist thinking in the 1950s, and it collapsed when the ideas began to go their separate ways once again in the late 1980s.

Of these two elements, the self-determination meme would seem to be the most successful, insofar as it was an essential element in the anti-colonial critique of White power in colonial-era Africa, in Afrikaner nationalist agitation against Britain and the Anglophone White South African establishment, in the separate development theory articulated *against* the majoritarian decolonization paradigm, in the internal debates of Nationalist theory through the 1980s, and in the country’s *post-apartheid* consensus upon the *individualist* self-determination of rights-based constitutional democracy. By contrast, race-based political groupism – a product, in the South African context, of Afrikaner political mobilization in the late 19th and early 20th Centuries – was influential for a time, but was ultimately left behind by the self-determination ideal upon which it depended for its legitimacy. (To some extent, the entire history of separate development could be said to have been a dispute *within* the self-determination paradigm, over what “self” was the relevant one that deserved formal recognition and autonomy. Racial groupism ended up losing.)

⁴⁴ Harvey & Reed, *supra*, 303.

⁴⁵ Thiétart & Forgues, *supra*, at 20-21 & 26 (*citing, inter alia*, D. Ruelle, “Can Nonlinear Dynamics Help Economists?” in *The Economy as an Evolving Complex System*, vol. V (P.W. Anderson, K.J. Arrow, & D. Pines, eds.) (Redwood City, California: Santa Fe Institute, 1988)).

The self-determination and race-group-political memes might be said each to have its *own* internal dynamics and to exist in some sense as a CAMS all unto itself. It is probably most useful here, however, to regard them as being constituent elements of the broader CAMS of separate development – an ideological system for organizing South African politics that emerged, developed, and ultimately dissolved through complicated mechanisms of ideational entrepreneurship, environmental reactivity, and internal contradiction. It has long been understood that ideology is

“a realm of contestation and negotiation, in which there is a constant busy traffic: meanings and values are stolen, transformed, appropriated across the frontiers of different classes and groups, surrendered, repossessed, reinflected.”⁴⁶

Complexity Theory provides a prism through which to express and help understand the development of such complicated conceptual relationships and their development over time.

The concept of complex *memetic* systems may provide only an incomplete answer to the policymaker’s paradox inherent in Complexity, but it is something of an answer nonetheless. Within the ideational “space” of a particular conceptual “attractor,” behavior may indeed be unpredictable and hence uncontrollable. The memetic conception of Complexity, however, suggests that one might retain at least some hope of effecting purposeful systemic change by seeking to alter the very concepts and conceptual interrelationships that help constitute the attractors around which orbit the ideological patterns that help shape unit-level operational behavior and thus drive concrete system outcomes.

In South Africa, Prime Minister Verwoerd gambled that the compelling power of post-colonial universal-franchise majoritarianism would be answerable by the articulation and operationalization of a group-keyed ethic of “separation” that claimed fidelity to the very ideal of self-determination that gave universal franchise its legitimacy. *Apartheid*’s opponents, in South Africa and around the world, opposed separate development in the name of that same ideal. On this sharply and bitterly contested conceptual terrain, Verwoerdian approaches had some success for a while, before being superseded by a variation offered by P.W. Botha as a way to mitigate separate development’s internal contradictions and to make the South African system more consonant with Botha’s own *separate* but overlapping ideology of defensively militant anti-communism. Before long, this Botha variant was itself superseded by what was in a sense the hybridization of majoritarian self-determination with the kind of formal protections that National Party ideology had earlier demanded for race-group “selves” competing within the political system, but were now applied to *individual* human selves in the form of consitutional rights.

Memetic competition, including deliberate and self-conscious ideological advocacy and counter-advocacy, was a critical part of the process. Indeed, key participants seem to have been keenly aware of the politically morphogenic properties of their ideological articulations. There was, throughout this period, a clear relationship between the ideas expressed about how the South African political system should work and the forms it actually took when acted upon by leaders guided by such formulations. Ideas *did* matter, and they were perceived – apparently

⁴⁶ Terry Eagleton, “Ideology and its Vicissitudes in Western Marxism,” in *Mapping Ideology* (Slavoj Žižek, ed.) (London: Verso, 1994), at 179, at 187.

quite accurately – as being capable of having significant, or even transformative, consequences. That, in fact, was the whole point.

Even given all the difficulties of applying Complexity science in the human realm, therefore, this may be one lesson that policymakers can learn. If indeed Complexity thinking reinforces the intuitive insight that an “ideology has its own law of motion”⁴⁷ – and if such “laws” exercise a real influence upon outcomes that is predictable at least in the sense that memetic schemes tend predispose specific *types* of behavior and relationship patterns – then the policymaker may have to become ideology’s lawyer.

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⁴⁷ Nicholas Abercrombie, Stephen Hill, & Bryan S. Turner, “Determinacy and Indeterminacy in the Theory of Ideology,” in *Mapping Ideology*, supra, at 152, 155.