SYSTEMS SCIENCE AND THE SUPREME COURT

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INTRODUCTION

Few people would dispute that appointing and confirming a Supreme Court Justice is a delicate and complex process. President Obama's nomination of federal judge, Merrick Garland, certainly proves the point.[1] Yet Obama's challenges do not stem solely from his predicament as a lame-duck leader facing a recalcitrant Congress. The complexities here are far more systemic.

Because the systems involved are interlocking, their entanglement only aggravates the complexity of the process. Our constitutional system turns this practical employment decision into a matter of fundamental principle. That system is further complicated by our conflicted system of governance, which forces the chief executive officer to ask the legislature to approve our highest judicial officials. Beyond this balance-of-powers structure, our dual-party political system foments feelings of fragmentation and competition. The resulting antagonism inevitably causes lawmakers to treat the judicial screening process as a power play of epic proportions.

The real difficulty lies in reconciling these seemingly irreconcilable systems. Up to now, this complexity has been treated as an analytic enigma decipherable only through legal or political argumentation. But science may offer another alternative. Because legal institutions like the Supreme Court are complex social systems, they are susceptible to scientific explanation. In fact, two of the field's most exciting new discoveries—complex systems theory and coordination dynamics—seem to offer some valuable insights. This Essay will highlight these breakthroughs, explain their key features, and reveal their significance for the law, the Supreme Court, and the Court's appointment process.

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1. Ariane de Vogue, *Remember Merrick Garland? Supreme Court Nominee Waits (and Waits)*, CNN POLITICS (Sept. 6, 2016, 7:22 PM), http://www.cnn.com/2016/09/06/politics/merrick-garland-supreme-court-wait/.

COMPLEXITY AND COORDINATION DYNAMICS

Complexity theory investigates the interrelationship among parts of a system, the parts and the whole, and the whole and other systems.[2] Currently applied in disciplines ranging from economics, ecology, and sociology,[3] to physics, neuroscience, and psychology,[4] this unifying framework holds that all systems operate in essentially the same recursive, emergent, and decentralized way.[5] In short, just as the parts shape the whole, the whole also shapes each of its parts, and each whole system continuously shapes and is shaped by the systems around it.[6] Think of a school of fish. The movements of individual fish collectively determine the cohesion of the school, while the school's cohesion significantly constrains the behavior of each member.[7] Yet when the school encounters a shiver of sharks, its pattern characteristics do not remain stable but immediately adapt to the predatory threat.[8]

The fluidity of complex systems is a product of coordination dynamics. Coordination dynamics explain how and why system patterns form and change.[9] Under one prominent view, all systems contain elements that appear contradictory but actually are complementary.[10] These "complementarities" both define the system's parameters and prepare it to explore the gray areas in between.[11] To flourish, the system must find an effective means of reconciling and coordinating these discordant elements. However, even the best solution is never permanent. As new information disturbs the existing equilibrium, the system recalibrates the competing factors, initiating an endless cascade of coordination patterns that constantly fluctuate with the circumstances.[12]

Coordination dynamics is perhaps most evident in human brain function. The brain consists of three competitive but complementary structures that evolved incrementally over millennia.[13] To grossly oversimplify, the hindbrain is selfish, the

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2. *See About Complex Systems*, NEW ENG. COMPLEX SYS. INST., http://www.necsi.edu/guide/study.html (last visited Sept. 21, 2016).
3. *See* J.B. Ruhl, *Law's Complexity: A Primer*, 24 GA. ST. U.L. REV. 885, 887 (2008).
4. *See* J.A. SCOTT KELSO & DAVID A. ENGSTRØM, THE COMPLEMENTARY NATURE 88–89 (2006).
5. *See* James Ladyman et al., *What is a Complex System?*, PHILSCI ARCHIVES 6–10 (Mar. 8, 2012), http://philsci-archive.pitt.edu/9044/4/LLWultimate.pdf.
6. *See* KELSO & ENGSTRØM, *supra* note 4, at 90–91, 112.
7. *See id.* at 112.
8. *Id.*
9. *Id.* at 90.
10. *See id.* at 2–3, 6–7.
11. *See id.* at xi–xv, 4, 7–8, 10–11.
12. *See id.* at 4, 8–12.
13. *See* GERALD A. CORY, JR., THE CONSILIENT BRAIN: THE BIONEUROLOGICAL BASIS OF ECONOMICS, SOCIETY, AND POLITICS 9–18 (2004).

midbrain is social, and the forebrain is rational.[14] Bent on survival, the hindbrain predisposes us to obey authority, avoid harm, and fear punishment.[15] While the midbrain seeks the same end, it uses the opposite means of prompting us to trust and cooperate with others.[16] The forebrain sits above the fray negotiating with both protagonists, mediating their conflict, reconciling their differences, and developing general principles for resolving future disputes.[17]

Though the brain's three modules are integrated and interdependent, they operate in two different ways. Our selfish and social drives are automatic and emotional, while our rationality is reflective and deliberative.[18] Given these cognitive complementarities, our minds must continually entertain and accommodate opposed attitudes, impulses, and ideas. Facilitating the coordination process is our left frontal brain hemisphere, or what neuroscientist, Michael Gazzaniga, calls our "left hemisphere interpreter."[19] Ironically and perhaps prophetically, Gazzaniga likens the interpreter to a consummate lawyer, marshaling and weighing all the evidence before vigorously justifying her decision.[20]

"NATURAL" LAW

This debate is not just all in our heads. Because brain and environment form another complex system, we subconsciously project our mental dynamics onto our social and cultural artifacts, including our legal institutions.[21] Indeed, this "natural" law[22] instinct seems bound by the same coordinative principles for the same evolutionary reasons. Although science has not yet proven the causal connection between our biological and legal systems, the correlations here are too striking to ignore.

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14. *See id.* at 21–22; PAUL D. MACLEAN, THE TRIUNE BRAIN IN EVOLUTION: ROLE IN PALEOCEREBRAL FUNCTIONS 13–18 (1990).

15. *See* CORY, JR., *supra* note 13, at 12.

16. *See id.* at 11, 17.

17. *See id.* at 18.

18. *See* JOSHUA GREENE, MORAL TRIBES: EMOTION, REASON, AND THE GAP BETWEEN US AND THEM 133–37 (2013); JONATHAN HAIDT, THE RIGHTEOUS MIND: WHY GOOD PEOPLE ARE DIVIDED BY POLITICS AND RELIGION 52–56 (2012).

19. MICHAEL S. GAZZANIGA, WHO'S IN CHARGE? FREE WILL AND THE SCIENCE OF THE BRAIN 82–85 (2011).

20. *See* MICHAEL S. GAZZANIGA, HUMAN: THE SCIENCE BEHIND WHAT MAKES US UNIQUE 143–44 (2008) (quoting ROBERT WRIGHT, THE MORAL ANIMAL: WHY WE ARE THE WAY WE ARE 280 (1994)).

21. *See* ANTONIO DAMASIO, SELF COMES TO MIND: CONSTRUCTING THE CONSCIOUS BRAIN 309–12 (Vintage Books 2012) (2010); Ruhl, *supra* note 3, at 896–97.

22. My use of "natural" law differs significantly from common legal usage. In jurisprudence, natural law refers to a moral truth discovered by pure reason. *See* Kent Greenawalt, *How Persuasive is Natural Law Theory?*, 75 NOTRE DAME L. REV. 1647, 1650–51 (2000). In the current scientific context, the term describes a social rule emerging from neurobiological processes.

Metaphorically speaking, law is the interpreter that mediates and reconciles society's inner conflicts. At each level, and in many defining respects, our legal systems bear the unmistakable imprint of complementarity and coordination dynamics. From our trifurcated system of government (executive, legislative, and judicial) to our tripartite legal fields (criminal, civil, and constitutional), to our trilateral court systems (low, intermediate, and high), to our trinary system of litigation (parties, jury, and state), our legal institutions consistently mirror our neural struggle to coordinate the selfish, social, and rational strands of our complex human fabric.

Indeed, this coordinative tendency is not just evident *in* law, but also pervades our theories *about* law. Over the ages, jurists consistently have described law's essence in three ostensibly inconsistent ways.[23] Some see law as a rule or command issued by a recognized authority and backed by the threat of punishment for noncompliance.[24] Others view it as a sociological phenomenon susceptible to changing legal or cultural conventions.[25] Still others think law is a set of timeless moral principles accessible through logic and reason.[26] Though these theories reflect different aspects of human nature, our jurisprudence is nothing but a history of attempts to properly coordinate them.[27]

SUPREME SYNERGY

The Supreme Court plays an integral role in this dynamic. As a complex decision-making network, the justice system works much like the brain. Self-interested parties initiate litigation with a thorny legal problem, offering polarized and, in many cases, self-serving positions on how to resolve it. During the case's ascent through the court system, judges invoke social policies to inform the discussion but often disagree about the relevance, weight, and implications of these goals. If the issue lingers, the Supreme Court finally steps in to quell the cognitive dissonance, fulfilling its function as the law's left hemisphere interpreter.

In fact, like its cerebral counterpart, the Court bears the same dynamic properties as the systems it serves. Because Supreme Court Justices are politically appointed, they bring to the bench a divergent array of "selfish" ideologies. This compositional

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23. *See* Brian Z. Tamanaha, *The Third Pillar of Jurisprudence: Social Legal Theory*, 56 WM. & MARY L. REV. 2235, 2236–40, 2266–67 (2015).

24. *See* Anthony J. Sebok, *Misunderstanding Positivism*, 93 MICH. L. REV. 2054, 2063–65 (1995) (explaining classical positivism).

25. *See* Tamanaha, *supra* note 23, at 2241.

26. *See* Greenawalt, *supra* note 22, at 1650–51 (analyzing natural law theory).

27. *See generally* Harold J. Berman, *Toward an Integrative Jurisprudence: Politics, Morality, History*, 76 CAL. L. REV. 779 (1988) (discussing past attempts at reconciliation and presenting a new integrative jurisprudence).

complementarity, if you will, equips the Court to assess the full spectrum of possible solutions to the parties' supposedly intractable dispute. Should partisan impulses persist, precedent and *stare decisis* compel respect for the judicial conventions of the past, effectively erecting socio-historical boundaries to the Justices' coordinative discretion. Seems even big fish must follow school rules. Ultimately, though, the Court uses its reason to square these inputs with the law's core principles so it can achieve a workable accommodation of interests.

This coordinative pattern even finds expression in the Court's theories of constitutional interpretation. While commentators list and label these theories differently,[28] three familiar approaches seem to emerge from the chaos. One school treats the Constitution like a powerful authority figure—say a strict parent—whose word (read, text) is law and whose wishes (read, original intent) must be faithfully executed.[29] Another camp sees our founding document as an amoebic social organism that develops in stages of precedent shaped by its judicial ancestors and constantly adapts to the changing needs of the governed.[30] A final group interprets the Constitution as a rational collection of inalterable values and ideals that define the moral essence of our nation.[31]

Yet these theories do not necessarily diverge in practice. Because Supreme Court Justices represent conflicting elements in a complex system, they continually must reconcile their interpretive differences to resolve the constitutional issues that come before them. Of course, constitutional scholars are not bound by the Court's collaborative constraints, so they traditionally have exhibited more competitive intransigence. But even these interpreters have evolved toward coordination, with some dipping their toes in the waters of pluralism,[32] others soaking in the

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28. *Compare* Thomas E. Baker, *Constitutional Theory in a Nutshell*, 13 WM. & MARY BILL RTS. J. 57, 95–100 (2004) (naming nine types of constitutional interpreters), *with* Robert C. Post, *Theories of Constitutional Interpretation*, 30 REPRESENTATIONS 13, 19–26 (1990) (identifying three theories).

29. This view combines theories of textualism, originalism, and structuralism. *See* Baker, *supra* note 28, at 95–96, 98–99 (discussing these theories, among others).

30. Such a conception often is called "living constitutionalism." *See* Scott Dodson, *A Darwinist View of the Living Constitution*, 61 VAND. L. REV. 1319, 1322–25 (2008).

31. This approach follows the natural law tradition. *See* Eduardo M. Peñalver, *Restoring the Right Constitution?*, 116 YALE L.J. 732, 734–36, 763–66 (2007).

32. *See generally* Stephen M. Griffin, *Pluralism in Constitutional Interpretation*, 72 TEX. L. REV. 1753 (1994).

converging streams of integration,[33] and a few taking the final plunge into complexity.[34]

APPOINTMENT IMPLICATIONS

So what's the takeaway for the Supreme Court nomination process? Certainly, complexity theory and coordination dynamics can help us see the current crisis in a whole new light. Indeed, aided by science's new lenses, some familiar patterns begin to emerge. On the Republican side, party leaders have relied on "selfish" and social arguments to block the process. After flexing their political muscle by asserting the power of numbers,[35] Senate Majority Leader, Mitch McConnell, waged a tit-for-tat battle against Vice President Joe Biden, who had threatened in 1992 to delay Republican Supreme Court nominations.[36] Eventually, the GOP sought broader grassroots support for their strategy, citing a longstanding congressional custom of tabling end-of-term nominees[37] and the voters' right to influence the selection process by electing a new president.[38] Democrats, by contrast, have opted to take the high road. By grounding their position in constitutional principles of good governance, liberals hope to rationalize the congressional duty to give advice and consent on the nominee.[39]

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33. *See* Bruce Ackerman, *The Living Constitution*, 120 HARV. L. REV. 1737, 1809 (2007) (seeking to "integrate organic and mechanical elements [of the constitution] into a deeper form of understanding").

34. *See* Daniel S. Goldberg, *And the Walls Came Tumbling Down: How Classical Scientific Fallacies Undermine the Validity of Textualism and Originalism*, 39 HOUS. L. REV. 463, 486–91 (2002).

35. *See* Erin Kelly, *GOP Senators Vow Not to Consider Garland to Fill Supreme Court Vacancy*, USA TODAY (Mar. 17, 2016, 7:06 AM), http://www.usatoday.com/story/news/2016/03/16/gop-senators-vow-not-consider-garland-fill-supreme-court-vacancy/81856428/ (describing the Republican party strategy of using its Senate majority to block the appointment process).

36. *See* Michael A. Memoli, *The Supreme Court Fight Has Also Set Up a Battle Between Joe Biden and Mitch McConnell*, L.A. TIMES (Mar. 24, 2016, 2:01 PM), http://www.latimes.com/nation/politics/la-na-biden-supreme-court-20160323-story.html (noting Senator McConnell's tactic of adopting Biden's earlier advice against filling a Supreme Court vacancy in an election year).

37. *See* Lauren Carroll, *Mitch McConnell Exaggerates 'Tradition' of Not Confirming Election Year Supreme Court Nominees*, POLITIFACT (Mar. 22, 2016, 4:47 PM), http://www.politifact.com/truth-o-meter/statements/2016/mar/22/mitch-mcconnell/mitch-mcconnell-exaggerates-tradition-not-confirmi/ (reporting Senator McConnell's statement that "[The Republicans are] following a longstanding tradition by vowing not to consider any Supreme Court nominee until after a new president is inaugurated in 2017.").

38. *See* John D. McKinnon & Kristina Peterson, *Republicans, Democrats Hold Firm in Standoff Over Obama's Supreme Court Nominee*, WALL ST. J. (Mar. 20, 2016, 8:12 PM), http://www.wsj.com/articles/republicans-democrats-hold-firm-in-standoff-over-obamas-supreme-court-nominee-1458491580 (quoting Senator McConnell's comment that "[t]he American people need to weigh in and decide who's going to make this decision").

39. *See* Glenn Kessler, *Does the Senate Have a Constitutional Responsibility to Consider a Supreme Court Nomination?*, WASH. POST (Mar. 16,

These system sciences also can *inform* the appointment process. If complexity theory teaches us anything, it is that you cannot understand a system simply by knowing its individual parts. Rather, you must learn how the parts interact with each other, how their interaction affects the dynamics of the larger system, and how the system continually modifies its parts.[40] As a corollary principle, one cannot predict the effect of tinkering with any single component.[41] We might devise an antibiotic to kill *this* particular germ but, in so doing, create a network of resilient superbugs. Because the system is synergistic, piecemeal tactics can have unintended consequences.

The same holds true for Supreme Court appointments. According to conventional wisdom, the best way to game the system is to select or oppose candidates on ideological grounds. But recent research reveals the futility of this practice. After a relatively brief "honeymoon" period on the bench, virtually all Justices undergo a significant degree of ideological drift over time.[42] Some soften or harden their beliefs, while others incrementally switch allegiances.[43] What's more, their fluctuations may not be solely or even largely self-imposed. Rather, they seem to depend on the constituency of the Court and trends within the government as a whole.[44] Cutting through the rhetoric, it seems no matter how polarized judicial ideologies may be, the art of judging consistently conforms to the laws of systems science.

Because science both limits *and* illuminates, it also can help us probe a nominee's jurisprudential positions, including her interpretive philosophy. Interpretation is a system of meaning in which a declarant seeks to communicate information that an interpreter seeks to understand.[45] Judges committed to textualism, originalism, or naturalism see this relationship in dyadic terms: as a subject investigating a static object.[46] Complexity theory destroys this interpretive divide. It shows that subject and object are complementary agents in a circular feedback loop. Just as the declarant conveys meaning *through* the text, the interpreter imposes

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2016), https://www.washingtonpost.com/news/fact-checker/wp/2016/03/16/does-the-senate-have-a-constitutional-responsibility-to-consider-a-supreme-court-nomination/.

40. *See* Ruhl, *supra* note 3, at 890–96.

41. *See id.* at 902.

42. *See* Lee Epstein et al., *Ideological Drift Among Supreme Court Justices: Who, When, and How Important?*, 101 NW. U. L. REV. 1483, 1519–20 (2007).

43. *See id.* at 1486, 1497, 1504.

44. *See id.* at 1520.

45. *Interpretation*, Black's Law Dictionary (10th ed. 2014).

46. *See* Goldberg, *supra* note 34, at 471–72. The only difference is, textualists and originalists think the object is a man-made document with fixed meaning, while naturalists say the object is an enduring truth beneath the document's imperfect words.

meaning *on* the text, and the declarant's text simultaneously informs and changes the perspective *of* the interpreter.[47]

The more human nature evolves, the more this reciprocal understanding adjusts. By injecting new information into the system, each interpreter alters its dynamic, destabilizing existing meanings and perpetuating a repeating cycle of reanalysis. So we might be skeptical of nominees who proclaim complete interpretive neutrality, regardless of their political commitments. If all interpretation is dialectical, perhaps we should spend less time worrying about philosophical dogma and more time exposing its scientific underpinnings.

For now, the biggest concern is that the process itself has ground to a halt. This impasse is far worse than ordinary political gridlock because the nominee review system does not operate in isolation. It works in tandem with our system of government, which depends on the problem-solving capacity of our courts. Within this judicial system, the Supreme Court, as supreme coordinator, addresses the most perplexing issues surrounding our deepest democratic ideals. So until the Court is restored to full strength, our entire legal system stands vulnerable to dysfunction. Though nine Justices can coordinate majority coalitions, eight can get locked into an unbreakable complementarity, turning the law's master interpreter into the Great Undecider. In fact, two such stalemates already have occurred since Judge Garland's nomination, affecting (by inaction) the fundamental rights of both public employees and immigrants facing deportation.[48] If or when these Supreme deadlocks recur, the courts will continue to lose their conscience, legislators will continue to lose their counsel, and the law will continue to lose the highest reaches of its rationality.

CONCLUSION

Although no one knows exactly how the current appointment conflict will end, a few things are reasonably clear. First, any solution to this problem will require reconciliation of the parties' competing views. Second, whatever form the reconciliation process may take, the science of complex systems and coordination dynamics will factor heavily in the analysis. Third, and finally, unless we embrace such scientific approaches to law, we undoubtedly will confront an increasing number of legal conundrums that even the wisest Supreme Court Justice cannot resolve.

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47. *See id.* at 479–81.

48. *See* Adam Liptak et al., *How a Vacancy on the Supreme Court Affected Cases in the 2015-16 Term*, N.Y. TIMES, (June 27, 2016), http://www.nytimes.com/interactive/2016/02/14/us/politics/how-scalias-death-could-affect-major-supreme-court-cases-in-the-2016-term.html?_r=0.