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Biological Metaphors For Whiteness: Beyond Merit and Malice

Brant T. Lee*

PREFACE: DISPARATE IMPACT V. EQUAL PROTECTION

There is a legal storm brewing over the cause of racial inequality. The eye of the storm is disparate impact liability under Title VII of the Civil Rights Act of 1964.[1] The issue is the importance of discriminatory intent to antidiscrimination policy and theory. *Washington v. Davis* established the strong precedent that a violation of the Equal Protection Clause requires a finding of discriminatory intent.[2] However, at the time *Davis* was decided, the Court had earlier determined in *Griggs v. Duke Power Co.* that an employment practice that results in a racially disparate impact constitutes a violation of Title VII's prohibition on racial discrimination in employment, regardless of whether there was any discriminatory intent.[3] While requiring discriminatory intent to establish a constitutional discrimination claim, the *Davis* Court did not address the lack of such a requirement in establishing a statutory discrimination claim under Title VII.[4] Congress amended Title VII in 1991, codifying the disparate impact test.[5]

An uneasy standoff exists between the constitutional antidiscrimination standard, which requires proof of discriminatory intent, and the statutory antidi-

Associate Professor of Law, University of Akron School of Law. My heartfelt gratitude to Thanh Ngo and Seema Misra for their able research assistance and organization skills. Versions of this paper were presented at the Cleveland-Marshall School of Law for the Northeast Ohio Legal Scholarship Consortium, the Law and Society Association Annual Meeting 2009, the Critical Race Theory at 20 conference at the University of Iowa College of Law, and the 2010 joint meeting of the Conference of Asian Pacific American Law Professors and Western Law Teachers of Color, hosted by the University of Arizona School of Law. In addition, I presented this paper to faculty colloquia at Pace University School of Law and Saint Louis University School of Law. I am thankful to the organizers and institutions that made these presentations possible, and to participants at each of these presentations for their indulgence and their helpful insights and suggestions. My deepest appreciation always to Marie B. Curry.

1. Pub. L. No. 88-352, §§ 701–716, 78 Stat. 241, 253–66 (codified as amended at 42 U.S.C. §§ 2000e to 2000e-2 (2006)).
2. 426 U.S. 229 (1976).
3. 401 U.S. 424 (1971).
4. *See Davis*, 426 U.S. at 248.
5. Pub. L. No. 102-166, 105 Stat. 1071.

scrimination standard, which does not. Although Congress's power to impose such a statutory standard has survived to date, Equal Protection doctrine has become ever more hostile to government efforts to aid any racial group, regardless of the motivation. Of course, the standards themselves are not necessarily in conflict. A challenged practice by a state employer that is not intentionally discriminatory but has a disparate impact might certainly satisfy the constitutional standard but nonetheless violate the stricter statutory standard. But given the Court's increasing reluctance to accommodate race-conscious affirmative action policies against Equal Protection challenges,[6] the potential conflict is clear. The issue is not whether the practice that results in disparate impact will survive constitutional scrutiny. The issue is whether the statutory requirement to *correct* this impact will survive constitutional scrutiny. The possibility looms that a state employer might on the one hand be required by Title VII to eliminate facially race-neutral procedures or policies that have a disparate impact on minorities, and on the other hand be constitutionally forbidden to discard or change those policies implemented to benefit those minorities. In short, Title VII requires race-conscious action to neutralize disparate impact, while the Constitution prohibits it. Moreover, because Title VII requires such race-conscious changes, Title VII itself might be subject to an Equal Protection challenge.[7]

Ricci v. DeStefano[8] seemed to present an opportunity—or threat, depending on one's appetite for resolving the matter—to settle this conflict. In *Ricci*, the New Haven Fire Department administered a promotions test that White firefighters passed at a significantly higher rate than African-American firefighters. Under the applicable rules, not a single one of the nineteen individuals eligible for promotion would have been African-American.[9] Concerned that implementing the test might be challenged as violating Title VII's disparate impact provision—and confronted with a threatened lawsuit to that effect—New Haven declined to use the test.[10] White and Hispanic firefighters sued, claiming that the City had violated the Equal Protection Clause by choosing not to promote them using the test.[11]

The Supreme Court in a 5-4 vote held that the City had violated Title VII because its actions constituted race-conscious disparate treatment, and there was no strong basis in evidence of disparate impact liability.[12] Thus, the Court

6. *See, e.g.*, Gratz v. Bollinger, 539 U.S. 244, 274–75 (2003) (invalidating undergraduate affirmative action admissions policy); Adarand Constructors, Inc. v. Pena, 515 U.S. 200 (1995) (applying strict scrutiny to affirmative action program).

7. Richard Primus, *Equal Protection and Disparate Impact: Round Three*, 117 HARV. L. REV. 493 (2003).

8. 129 S. Ct. 2658 (2009).

9. *Id.* at 2666.

10. *Id.* at 2667–71.

11. *Id.* at 2671.

12. *Id.* at 2681. Title VII provides employers a defense from disparate impact liability if the

avoided the Equal Protection issue, although Justice Scalia in concurrence warned that "the war between disparate impact and equal protection will be waged sooner or later . . . ."[13]

Thus the stage has been set for a battle over the legitimacy of disparate impact. One day, a government employee somewhere is going to identify a policy or practice that has a racially disparate impact. There will be no showing of discriminatory intent. But the practice will be unrelated to any job requirement or business necessity, and there will be a direct conflict between the statutory mandate to eliminate disparate impact and the constitutional prohibition against doing so.

INTRODUCTION

A. Two Narratives: Malice and Merit

1. The problem of persistent inequality

The key fact that underlies contemporary public discourse on race in America is that racial inequality has proven stubborn and persistent. With all of the progress that has been made in the last fifty years on race issues, why does racial inequality persist? This is the question that frames all of the mainstream public debate about race.

This Essay does not directly address the mechanics of persistent racial inequality, but the rhetoric and imagery of it. The mechanics have been and continue to be thoroughly explored. Systemic racism, structural racism, institutional racism, unconscious racism,[14] implicit bias,[15] racial schemas,[16] stereotype threat,[17] microaggressions,[18] racial stigma[19]—there is now a voluminous body of work, theoretical, descriptive, and empirical, that set out persuasive accounts of how racial inequality is produced. Yet in the public discourse, little seems to have changed. We are stuck with two core narratives that have hemmed in the

practice in question is "job related for the position in question and consistent with business necessity." 42 U.S.C. § 2000e-2(k)(1)(A)(i) (2006). In addition, if there is an available alternative employment practice that has less disparate impact and serves the employer's legitimate needs, the employer must adopt it. § 2000e-2(k)(1)(A)(ii) and (C).

13. *Ricci*, 129 S. Ct. at 2683.

14. *See* Charles R. Lawrence III, *The Id, the Ego, and Equal Protection: Reckoning with Unconscious Racism*, 39 STAN. L. REV. 317 (1987).

15. *See* Jerry Kang, *Trojan Horses of Race*, 118 HARV. L. REV. 1489, 1507–17 (2005).

16. *Id.* at 1498–04.

17. *See* Claude M. Steele & Joshua Aronson, *Stereotype Threat and the Intellectual Test Performance of African Americans*, 69 J. PERSONALITY & SOC. PSYCHOL. 797 (1995).

18. *See* Peggy C. Davis, *Law as Microaggression*, 98 YALE L.J. 1559 (1988).

19. *See generally* GLENN C. LOURY, THE ANATOMY OF RACIAL INEQUALITY 57–107 (2002).

public imagination: the story of malice and the story of merit.

2. Malice

It is undeniable that there has been significant progress on many racial fronts. Justice O'Connor appeared hopeful in *Grutter v. Bollinger* when she wrote, "We expect that 25 years from now, the use of racial preferences will no longer be necessary to further the interest approved today."[20] In this statement, Justice O'Connor expressed the expectation that racial inequality will decline as a result of racial progress. Inherent in this expectation is an understanding about how the world works. Justice O'Connor implicitly assumed that once the anomalous distortions of past racial malice have been corrected, racial diversity in elite educational institutions would result. We have general consensus that there is no inherent racial difference or intrinsic superiority or inferiority between racial groups, and we suppose that people of equal intrinsic ability will achieve roughly equal outcomes in the long run. In this narrative, racial discrimination is the only thing that has kept this from happening, so because racial discrimination is in decline, racially equal outcomes should soon follow.

Justice O'Connor's formulation follows the mainstream conception that unfair racial inequality occurs only when there is intentional racism, or malice. Moreover, independent, uncoordinated racist acts by individuals, while blameworthy, do not in this framework constitute a racist system, and thus do not explain the broad levels of observed inequality. Individual incidents are merely anecdotes and anomalies. Absent hierarchical coordination and widespread participation, no general societal claim can be made. Thus, racism has simultaneously become universally vilified and defined virtually out of existence.

There is, of course, clear evidence that Americans are not, in fact, color blind. From redlining to social networks and church attendance, social behavior clearly evinces race consciousness. However, this kind of race consciousness is seen as benign because it is either natural or reasonable or both. If natural and reasonable, how could it be the basis of unfair harm?

With regard to institutions, we have again managed to define racism out of existence. An institution is thought to be racist only when the intentional discrimination is organized—when there is a conspiracy or some kind of management direction. Otherwise, the wrongdoing is reduced to the mere sum of the anomalous, irrational actions of a small number of individuals for which the company and all of its innocent stakeholders should not be held responsible.

Because only intentional, irrational racism can be the cause of actionable inequality, scholars inclined to support stronger efforts to address racial inequality have for good reason—and successfully—gone in search of malice. Yet in the era of colorblindness malice does not lie around on the surface to be found.

20. Grutter v. Bollinger, 539 U.S. 306, 343 (2003).

Frustrated progressives have delved deeper and deeper into the subconscious and the social structure to find how racial inequality is produced, and they have tried to make the case that the processes that they have identified constitute racism.

3. Merit

Most well-intentioned contemporary Americans disapprove of racism. With the image of intolerant racists spitting and wielding water hoses clearly in mind, most can sincerely claim not to be racist, and have come to bear considerable resentment at what they perceive to be repeated unfounded accusations. Confronted with theories and studies identifying different forms of racism, yet looking in the mirror and not seeing Bull Connor, we are inclined not to credit these theories. While no doubt some examples of explicit racism remain, we see no collusion and no conspiracy—in short, no villains.

But we are not off the hook. The question remains how persistent racial inequality can be explained. In the absence of racial malice the only generally available alternative explanation is the meritocratic system.

The rhetoric of merit is the rhetoric of markets. This rhetoric is buttressed by our common experience with particular kinds of market experiences—in everyday life, we constantly make rational market assessments, weighing value against price and convenience. Pricing seems generally to follow quality, and so the general impression that lack of success in the market reflects lack of merit pervades. Market logic suggests that those earning less deserve less, or else why would they accept lower pay? Similarly, students attending lower-ranked schools are often presumed to be less competent than those attending higher-ranked schools—if they could have gone to higher-ranked schools, why wouldn't they?

Classical economic theory supports the claim that employers could not be either race-conscious or malicious without being punished by the market. If they decline to hire qualified employees for irrational reasons, rational competitors will take advantage of their mistakes. With this as the background narrative, it is no surprise that objections to affirmative action are framed as being unfair attempts to reward low quality. Thus merit provides the narrative framework to dismiss racism.

Yet racial disparities abound. The distasteful inference that non-Whites are inferior is avoided through careful references to culture and education, and optimistic predictions about the future attainment of equality. In time, and with hard work, the story goes, equality of opportunity will correct current inequalities. Left unsaid is the inference that if time does not bring equality, inherent racial difference will have been proven.

B. A Third Narrative: Self-Organization

Another kind of narrative is required. What common examples and experiences can help us to perceive inequality in a different light? It turns out that in economics and business management and computer science and even biology, observers of complexity are coming to understand how dominant systems can prevail without superior merit, can maintain their position without any conscious guidance or intent, and can be organized without any collusion or direction. The natural and reasonable behavior of individuals can lead to overwhelmingly dominant collective action. Markets, organisms, and ecologies coordinate themselves efficiently and organically, with surprising resilience and adaptability.

This Essay explores how these complex, self-organizing systems work, and makes the tentative claim that they are appropriate analogies for the success of Whiteness, and that they more accurately reflect how racial inequality is reproduced. By carefully drawing out the comparison to these systems in clear language, this Essay reimagines Whiteness using familiar images from perhaps unorthodox sources. The Essay starts in Part II with the example of network economics, showing how some of the feedback effects that support self-organization are found in standard economic theory as well. The Essay moves on to its principal discussion of biological metaphors in Part III.

Section A of Part III introduces an example from biology: slime mold cells. This section also describes how complex patterns result from very simple mathematical rules in cellular automata, and how economist Thomas Schelling showed that racial segregation can be seen to proceed from a very similar process. Section B describes the dynamics of coordinated movement among large groups of individual birds and fish, and compares that to game theorist Robert Axelrod's account of the evolution of cooperation through repeated interactions. Axelrod's game theory iterations explain not only cooperation but the perpetuation of unconscious racial stereotypes and mutual hostility. Section C explores the world of ant trails and swarm intelligence and examines how some of the principles of self-organization are displayed in human behavior through psychological processes known as information, reputation, and availability cascades. These cascades can produce racial polarization through a process very similar to the construction of ant trails.

Part IV briefly reviews some recently-developed concepts in the scholarship of racial inequality and traces how self-organization helps to bring them into focus. Finally, Part V acknowledges the possibility that a focus on the importance of self-organization and automatic processes in the reproduction of racial inequality could lead to an inference that racial inequality is in a sense natural or inevitable. Part V concludes with some thoughts on how unfettered natural processes can also be destructive and how there are natural limits to the operation of these processes. In the end, through this exploration of self-

organization, the moral challenge with which racial inequality confronts us is made starker, and the author's hope is that the call on conscience is made clearer.

A PRELIMINARY EXAMPLE: NETWORK ECONOMICS AND RACE[21]

Network markets are markets in which some of the standard tropes of classical microeconomic analysis do not apply. The key insight of network economics is that products that generate their value from interconnectivity or communication gravitate strongly toward a single network standard. Small, contingent events can have feedback effects that determine market shifts towards a particular standard. A strong corollary is that once a standard is established, it is "sticky," or "locked-in," and is relatively impervious to ordinary competitive pressures.

For example, the value of a telephone increases rather than decreases with each additional unit sold. The intrinsic merit of any particular communications device pales beside the importance of being able to connect to the telephone system. Owning a phone is indispensable because of all the other phones with which one can communicate. For our purposes the important qualities of network markets are: 1) that there are significant feedback effects that cause the market to accelerate towards a single standard or equilibrium; 2) that the success of a particular standard is highly path-dependent or contingent on historical events; and 3) that once established, the standard is "sticky," or persistent.

Two corollary characteristics of network markets that are significant in the racial context relate to merit and malice. First, because of the strength of the feedback effects, the historical establishment of dominant standards, and the stickiness of such standards, present intrinsic merit has relatively little immediate impact on market choices. No matter how intrinsically fantastic a newly invented communications device might be, if it will not connect to the telephone network, it will have difficulty breaking into the market. Telephone connectivity is a network standard. A single company that controlled the standard would wield monopoly power.

Second, once established, the mechanisms that allow the network standard to maintain its dominant position do not necessarily require active intervention or management on the part of the standard's owner. The processes that allow its dominance to persist are largely a function of ordinary market decisions by customers.

I have argued that Whiteness functions as a dominant network standard. Much of the value of an employee is bound up in that employee's ability to in-

21. I have previously written about the application of network economic models to race relations, and I offer a brief synopsis here. *See* Brant T. Lee, *The Network Economic Advantage of Whiteness*, 53 AM. U. L. REV. 1259 (2004).

teract and communicate with others. Because there is no technological barrier to communication across racial lines, the network effects are not direct. Nonetheless, I argue that differences in language, dialect, culture, and appearance—the meaning ascribed to racial phenotypes—result in feedback effects that allow Whiteness to persist as the de facto standard for employees.

One obvious problem with the network economics analogy is that in business environments there is often a particular company, and even a particular corporate executive, with a clear intent to establish and maintain a particular standard. Prior to its breakup, AT&T maintained its position rigorously. Microsoft can be credited not only with good fortune, but with Bill Gates having made decisions that helped to put Windows in the dominant position that it enjoys. There is, of course, no Bill Gates of Whiteness working to maintain its dominant position, and if there is, most well-meaning White Americans have received no instructions from him.

On the one hand, this objection overlooks the point that much of the network drive toward a dominant standard results from somewhat automatic processes. And on the other hand, our country's racial history reflects quite a significant historical push—enough to set us down a path that requires no further intervention to maintain.

Still, an analogy to corporate behavior is going to be inextricably bound to market theory. That the current era reflects a widespread commitment to a kind of market ideology is a thesis that is beyond the scope of this paper, but it suffices to say that the general intuition that market success is related in some way to merit is going to be especially hard to disrupt in the context of actual commercial transactions. Surely Bill Gates has been doing something important to merit his riches, we think.

Hence the current Essay. What other images and metaphors are available that might help a general audience get past its intuition about markets with regard to race? What complex systems exist where there is quite clearly no brilliant executive making meritorious decisions?

BIOLOGICAL METAPHORS

Let us now speak of slime mold, bait balls, and ant trails.

If you go walking in a forest on a sunny day, you might come across a bright orange blotch of goo on a damp spot on the forest floor, which you would want to be careful not to step in. You might wonder what animal had disgorged its breakfast that morning. But if you had a stop-motion camera, you would see the blob move carefully across the ground, in search of decomposing organic matter to absorb. You have met a slime mold.[22]

22. This account largely draws from STEVEN JOHNSON, EMERGENCE: THE CONNECTED LIVES OF ANTS, BRAINS, CITIES, AND SOFTWARE 11–17 (2001).

The slime mold is notorious among biologists, because of a curious characteristic. One morning there will be no slime mold in sight, and the next morning the entire creature appears, fully formed. It appears to be a plasmodic animal, ingesting nutrients by surrounding and absorbing them. And yet, when the conditions for slime mold formation dissipate, the creature disaggregates. Examining the contents of the forest floor discloses that the creature's constituent parts were there all along. The single-celled slime mold microbes are readily found, foraging as individual cells.

How and why does the slime mold organize itself? For centuries, biologists struggled to understand the process. They inadvertently projected hierarchical models of human organization onto the slime mold cells, speculating that when the time was ripe, there must be special "leader cells," chemically transmitting signals to the follower cells. But after decades of searching to find the distinguishing characteristics that would identify the "alpha" slime mold cells, none could be found.

Now consider the movement of a large flock of starlings, or the "bait ball" behavior of any number of schooling fish. Set aside for a moment the purpose or evolutionary cause of this behavior, and think about the mechanics. Thousands of individual starlings will form a cohesive shape in the air, moving with apparent purpose, discipline and speed, changing their collective direction smoothly and coherently. They don't scatter or dissipate into the atmosphere; they don't collide or stampede, even when disrupted or attacked by predators.

Similarly, and without apparent coordination, huge schools of anchovies or sardines will maneuver through the ocean waters in concert, forming shapes so distinct that they are the subject of familiar cartoons—images of many fish forming the shape of one large fish. The joke is typically that with a little coordination, the little fish could fight back and scare off the big fish,[23] and the joke is based on the strong appearance of coordination—the collective seems to be behaving like one large organism.

Finally, consider the path-making behavior of ants. When ants go out to collect food for the colony, we have all seen that they don't wander about in a massive chaotic frenzy. They form orderly lines, as though constricted by rope lines at a Disney theme park. You may be aware that they are following the scent of chemical road stripes—pheromones laid down by the ants that preceded them in line. However, they are not merely following a random meandering path laid down by the first ant that happened upon your picnic. In short order, they are following a path that constitutes the shortest and most direct route between your cupcakes and the ant nest. They do this without MapQuest or GPS. They do not stop for directions. Certain army ants will not only form the standard ant trail, but will also form three-lane highways, with the center lane

23. *See, e.g.*, LEO LEONNI, SWIMMY (1973) (children's book about a small fish fending off larger fish).

of marauders heading home with the loot. But this army has no general, no command center, and no intelligent discernment of any kind.

If human beings could accomplish this kind of intricate and complicated coordination, myriad traffic congestion problems could be solved, and immense energy savings realized. Instead, we rely on such crude instruments as stoplights and air traffic controllers—one hub communicating directly with each individual traveler. Can the mold, fish, and ants teach us a better way to coordinate ourselves? How do these organisms, none of which we imagine has the capacity to calculate strategy, form a conspiracy, or invent an innovative business model, manage to accomplish all of this coordinated activity? We could chalk it up to instinct, magic, or the wonder of creation, but scientists have taken a closer look at all of these behaviors and discerned the emergence of complexity and self-organization from simple rules.

A. Slime Mold and the Emergence of Self-Organization

It turns out, of course, that there are no alpha slime mold cells. It took biologists a long time to recognize the concept of emergence—that under certain conditions, particularly when there are feedback effects, normal consequences don't simply continue to result. At some point, an entirely new phenomenon or condition can emerge that doesn't resemble the prior trajectory in any predictable way. Within a certain temperature range, water, for instance, just keeps getting warmer and warmer; but at some point it undergoes a phase shift and explodes into vapor.

Of course, human beings have a tendency to anthropomorphize. We observe phenomena in nature and are sorely tempted to ascribe not only agency and intent but emotions and other human characteristics: The wasp was angry; the frog frightened; the ant industrious. One would think that ascribing purpose to a slime mold cell would challenge this tendency. But biologists kept looking for cells with a spark of leadership.

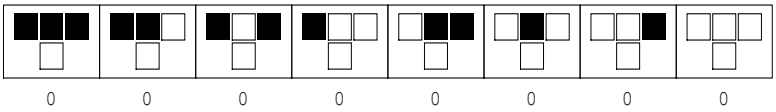
In Steven Johnson's telling, it took an applied mathematician and a molecular biologist with a physics PhD to realize that the patterns of behavior exhibited by slime mold cells resembled replicating patterns of emergence that had been described using mathematical models. That insight led quickly to what turned out to be the correct model—that slime mold cells organize themselves. By emitting a chemical trail that attracts other slime mold cells, and themselves being attracted by the chemicals other cells emit, they create a positive feedback loop that results in clusters of cells forming and joining together to create the larger amalgamations that are visible to the human eye.[24] How did math make this kind of pattern easier to imagine?

24. JOHNSON, *supra* note 22.

1. Cellular Automata

Math, of course, is in some sense perfectly abstract, and even less subject to ascription of intent or purpose than slime mold cells. Now consider the world of Stephen Wolfram,[25] who is enamored of mathematical constructs called cellular automata. In Wolfram's initial setup, one first considers a row of binary cells, like the top row of a sheet of graph paper, with some squares filled in black. One then determines the distribution of black and white cells in the second row by applying a simple rule. The form of the rule is that the color of each cell is determined entirely by the color of the three cells above it—the cell immediately above the target cell, and the cells to the immediate right and left of that upper cell. There are only eight possible permutations of three cells, or eight possible inputs. So the rule would simply assign the outcomes—black or white—of these eight possible inputs. The same rule can then be applied to the new second row of cells to generate a third row of cells, and so forth.

One example of such a rule would be that regardless of which of the eight permutations applies, the target cell would be white. Here is an illustration of this rule:

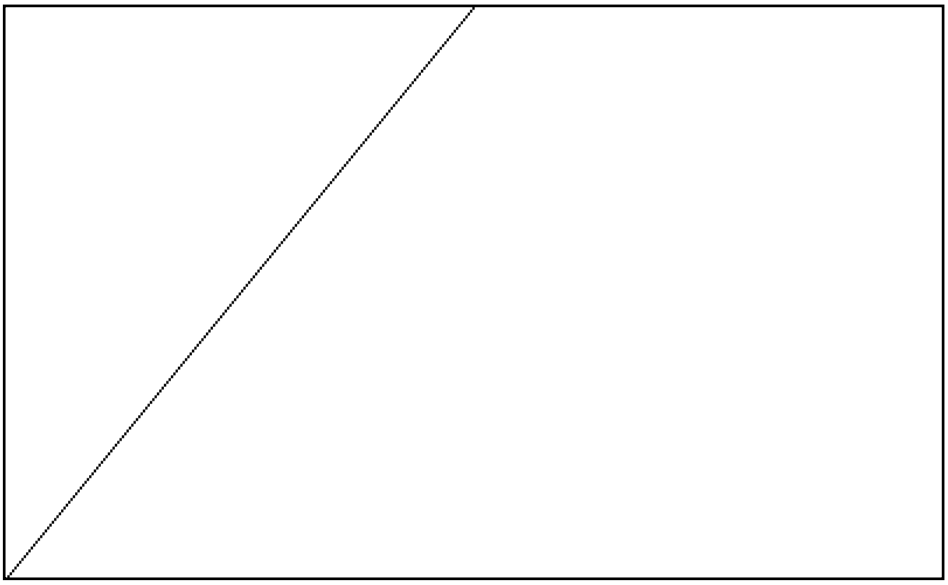


The three squares at the top of each of these eight blocks represent all the possible permutations of three cells. The square centered below each of these configurations represents the target cell, the cell generated by the rule. With this particular rule, you can see that the second row of cells—and every row after that—will be entirely white, no matter what distribution of black and white cells you started with.

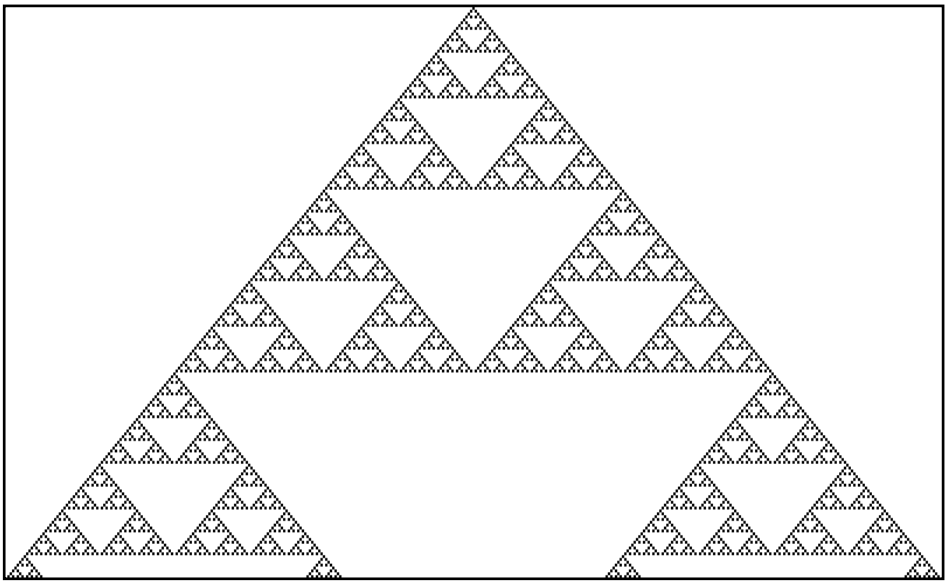
Not only is this particular rule a simple one, but the entire structure of the way these rules are generated is simple. Since the outcome cell must be either white or black, it's not difficult to calculate that the total number of possible rules—binary outcomes of eight possible inputs—is 2^8, or 256. You might think of the rule described above as Rule 0 (eight white cells—zero, in binary terms), each rule simply being the binary representation of a number between 0 and 255. Many of the rules generate simple, predictable patterns like the one described above. If you start with a single black cell in the middle of the first row, Rule 2^{26} generates a straight diagonal line of black cells trailing off to the left of the starter cell.

25. *See generally* STEPHEN WOLFRAM, A NEW KIND OF SCIENCE (2002).

26. This is the rule that would be represented in the foregoing scheme by six white cells, one black cell, and one more white cell, or 00000010—the number two, in binary.



These are simple rules and simple outcomes, as one would expect, but look what happens with Rule 18.[27] Starting from a single black cell in row 1, a clear pattern of ever-larger inverted triangles emerges, cascading downward from the initial starting point.

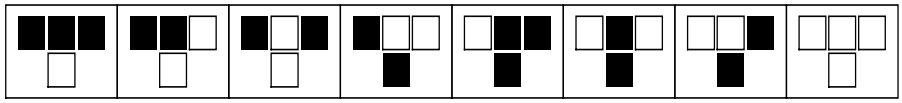


This is perhaps unexpected, but not necessarily startling. There is a stable pattern of triangular shapes, iterated in a complex, but regular fractal pattern—each small pyramid replicates the design of the next larger pyramid.[28] A nume-

27. This rule would be represented by 00010010, or the number 18 in binary.
28. Fractal patterns bear resemblance to chaos theory. Thomas Earl Geu, in describing the

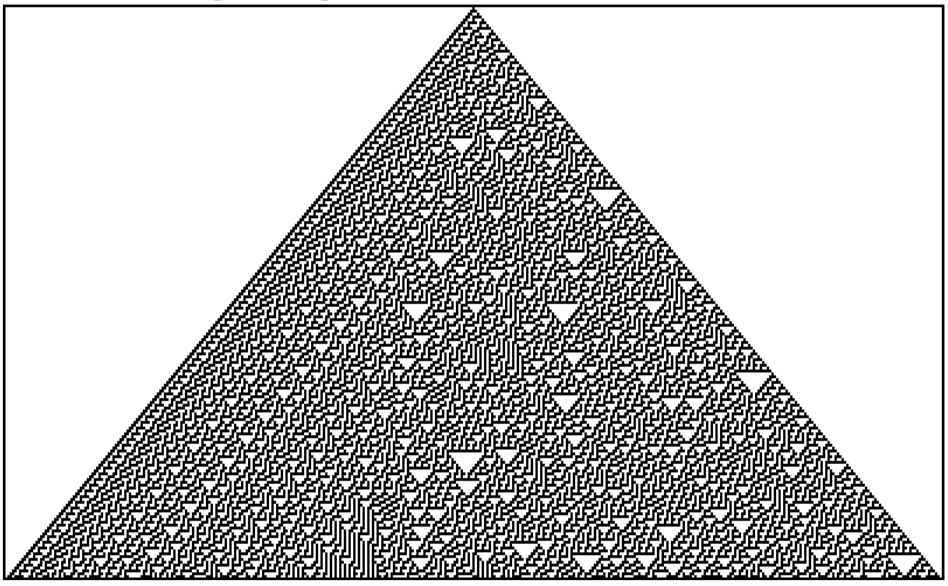
rologist might conclude that 18 is an auspicious number, as it produces such an intriguing image.

How do you feel about the number 30? Here's the rule—again, simply the number 30 as expressed in binary notation, applied to the same template as before:



0 0 0 1 1 1 1 0

Here is the pattern it produces:



Rule 30 produces a pattern that is both complex and irregular. While there are regularities to observe, there is no overall regular pattern. Even after a million steps, Wolfram reports that the pattern remains random in many respects. Here is Rule 110:

characteristics of chaos theory, noted that "patterns are *determined* by simple equations but they are *not predictable*." Geu lists the characteristics of a chaotic system as: "(1) nonlinearity; (2) complex forms; (3) sensitivity to initial conditions; and (4) feedback mechanisms." Here again are the historical context, the systemic nature and complexity that race scholars have been trying to support. Thomas Earl Geu, *The Tao of Jurisprudence: Chaos, Brain Science, Synchronicity, and the Law,* 61 TENN. L. REV. 933, 937 (1994).

As you can see, Rule 110—still a simple generation of binary outputs from eight possible permutations—produces a stable background pattern, but with feathery trails and tracks that wander unpredictably across the binary landscape for thousands of steps.

Cellular automata can be generated in many different ways. The parameters need not be binary (one could assign three or even an infinite spectrum of colors), the range of inputs need not be limited to three, and the generative structure need not be a one dimensional line of cells. The insight is that the simplest of rules can produce complex and unpredictable results, as well as complex stable structures.

2. Thomas Schelling and Segregation

This is not merely a neat little math trick. Rather, it has everything to do with Whiteness and racial inequality. Let us now consider the work of Thomas Schelling. Schelling won the 2005 Nobel Prize in Economics for game theory. It has been over thirty years since Schelling played with pennies and nickels on a checkerboard to show how residential segregation can result from simple preferences that most people would consider benign or natural.[29]

Schelling's initial insight is that if there are two groups, both cannot be in the majority. In the abstract, a society composed of two groups, each preferring to be in the majority, could not reach a happy equilibrium where each group's preferences were satisfied.[30] Of course, in America, Blacks and Whites are not abstract categories with theoretically equal desires for integration—in reality, Blacks and Whites report and reflect different levels of tolerance for integration.[31] Assume that Whites want integration as long as they are still comfortably in the majority, and that Blacks will accept minority status—but do not want to be completely isolated. You still cannot have a neighborhood where Whites want to be at least three-fourths and Blacks at least one-third of the population, and have everybody be happy. The tolerance levels have to be compatible.

If Whites want to be at least a two-thirds majority and Blacks want only to be at least one-fifth, then there is a range of distributions that will satisfy these conditions. But if any event causes the numbers to shift—say, a few "extra" Black people move in, or a few "too many" White people move out—it will result in a completely re-segregated neighborhood. The least tolerant will leave first, triggering succeeding waves of out-migration—another kind of feedback effect.[32]

Then, Schelling did three things. First, regarding the nature of space, he observed that the dynamics of distribution are likely to be heavily influenced by one's immediate neighbors.[33] At a dinner party comprised of an exact split of women and men who are seated alternately, each individual dinner guest will

29. THOMAS C. SCHELLING, MICROMOTIVES AND MACROBEHAVIOR 135 (1978).
30. *Id.* at 141–42.
31. *See id.*
32. *Id.* at 159–61.
33. *Id.* at 141–42.

be in the minority among his or her immediately neighboring conversation partners—each man will be outnumbered two-to-one, as will each woman. However, a guest's perceived position depends greatly on the scope and scale of her vision and perspective. If a guest were to expand her field by one on either side, then every person would be in a 3-2 majority.

Next, Schelling looked at the dynamics by which sorting occurs:[34] did the guest get assigned a seat at the dinner table, or did she make a selection based on what seats were available and who was already sitting there? After all, there are costs associated with a guest changing her position. Unless someone is very uncomfortable, switching seats could cause a scene.

Finally, he set up an elegantly simple experiment involving a checkerboard and a collection of dimes and pennies.[35] Suppose no coin wants to be in the minority among the eight (maximum) squares that the coin is in contact with. (Dime: I feel like the neighborhood is being taken over by Coppers; Penny: I'm not prejudiced, I just happen to prefer smooth edges). If one randomly places pennies and dimes on a checkerboard, including some vacancies, then assigns each coin an integration tolerance that corresponds to its preference of being in the majority, each coin would be unhappy unless at least four of its eight neighbors are of the same denomination.

If unhappy coins move to vacant spots that make them happier, they would end up with a neighborhood that is more segregated than any of the individual coins desires. It is possible to arrange a perfectly balanced and integrated board, but it is a delicate balance. The moment a few of the squares are vacated, some coins become less satisfied and are prompted to move, and it sets off a chain reaction that produces segregation again.

You may have noticed by now that a checkerboard is simply a two-dimensional plane of Wolfram's one-dimensional line of cells, and our tolerance settings for coins describe a rule set for a cell. Schelling's game is a cellular automaton in two dimensions. We are, of course, discussing people rather than coins, and Schelling's game reveals that racial segregation can be the result of math—that is, simple tolerance settings at levels that might be thought benign, produce more segregation than any individual desires. This is not about ordinary political calculations that exploit racial hatred and domination. Cellular automaton rule sets are not biased. There is no strategy devised of how to dominate the board; they do not plot. Thanks to computers, we can introduce additional complexity. We can assign a randomized range of tolerances to the pennies and dimes on our board; we can have coins moving at different speeds; we can allow our coins to move off the board entirely—and the result remains the same. Using a computer simulation—which replicates tolerance levels that would appear to be compatible with integration (people wanting to live in

34. *Id.* at 143–47.

35. *Id.* at 147–53, where the checkerboard experiment is described in full.

neighborhoods where people of their own race are at least thirty percent of the population)—over multiple iterations, you still get segregated patterns. In fact, most people in the simulation end up living in surroundings that are more segregated than what they would prefer.

So it turns out that a simple set of rules, replicated over the course of numerous independent iterations, can produce formidable complexity. Just as no alpha slime mold cell is required in order for the organism to form, no racial conspiracy or plot is required, and no racial bias beyond what many would consider ordinary preferences, to produce residential segregation. Housing segregation is at the root of cultural isolation, vast wealth disparities, political disempowerment, lack of access to social services, disparate health outcomes, and unequal educational opportunities. These conditions eventually lead to ghettos. Moreover, we did not start with a neutrally distributed checkerboard. Segregated residential patterns were established in American society in a historical era where public and private racial bias was unapologetic and explicit. In this context, simply removing bias—or, in Chief Justice Roberts's words, simply "to stop discriminating on the basis of race"[36]—will not necessarily accomplish much.

B. Flocks and Bait Balls: The Evolution of Coordination

Flocking and schooling behavior is another problem that mathematicians have tried to model. Computer models that reflect this behavior most accurately are derived from a very simple set of instructions. Each actor in the model, whether starling or anchovy, only needs to have awareness of a small number of its nearest neighbors. It must attempt to match the speed of its neighbors, and it must try to maintain a short, equal distance from its neighbors. Using these parameters, computer simulations of flocks of birds wheel realistically through imaginary space, dividing and rejoining in response to obstacles and other disturbances. The greater the number of individual members beyond a certain minimum threshold is, the greater the cohesion of the group. No leader bird is required. So the flight of the flock is not choreographed, at least not by any external director, although it moves with collective precision that air traffic controllers must envy.[37]

Do human beings exhibit flocking and schooling behavior? Well, one might argue that we often follow similar simple rules. We do pay particular attention to our nearest neighbors, and larger groups can form cohesive mobs. "Whenever people interact they become more similar, as they influence and im-

36. In *Parents Involved in Community Schools v. Seattle School District No. 1*, 551 U.S. 701, 748 (2007), the Court struck down a race-conscious policy designed to maintain integrated schools. Roberts famously closed his opinion with the following: "The way to stop discrimination on the basis of race is to stop discriminating on the basis of race." *Id.*

37. JAMES KENNEDY & RUSSELL C. EBERHART, SWARM INTELLIGENCE 109–15 (2001).

itate one another, teach and learn from one another, lead and follow one another. Norms and cultures . . . are the result."[38]

1. Collective Action Problems in Biology

One might think of schooling and flocking behavior as a collective action problem. "Fish gotta swim, birds gotta fly,"[39] and as individuals, each seeks to find food and evade predators. But which way should they travel? Schooling and flocking differ from the classic collective action problem[40] because it is thought to benefit each individual member of the school or flock to travel closely with the group more than traveling alone in the open sea or air. This prevents them from being easily picked off by predators. At the same time, there will be no flock with which to travel unless all of the individuals travel the same way. This requires that they all follow the same rule, and also that they recognize the others as in-group members to whom they will apply the same simple rules (i.e., swim closely together, do not collide, match your neighbor's speed and direction).

Confusion can originate internally and externally. If a member is not familiar with the appropriate amount of space the flock adheres to, or if the member has trouble matching the speed at which its neighbors are flying, it will disturb the pattern. Conversely, if its neighbors will not recognize it as being within their spectrum of flock-mates, it cannot force itself upon the flock pattern. It cannot maintain consistent distance between its neighbors if they are not interested in maintaining that same distance with it.

Nonetheless, the rules are simple as long as the individual flock members are capable of adhering to them. How might such simple coordination rules come about? Robert Axelrod famously applied game theory to gain insights on human behavior, demonstrating through various iterations of a prisoner's dilemma game how self-interested individuals might develop patterns and habits of cooperation in order to serve their long-term self-interests.[41] It is less well known that Axelrod explored the evolution of cooperation as applied to non-human biological systems as well.[42] Axelrod noted that kinship theory explains how a gene for cooperative or altruistic behavior might evolve as beneficial for the propagation of the gene, if not for the individuals practicing cooperation.[43]

38. *Id.* at 111.

39. OSCAR HAMMERSTEIN II & JEROME KERN, *Can't Help Lovin' That Man*, in SHOW BOAT (1927).

40. Switching to a better network standard is a more classic example of a collective action problem; because an individual who switches to a new and better standard will garner few rewards unless everyone else also switches.

41. ROBERT AXELROD, THE EVOLUTION OF COOPERATION (1984).

42. *Id.* at 88.

43. *Id.* at 89, 96–97. On the concept of natural selection working through rather than for individuals, see RICHARD DAWKINS, THE SELFISH GENE (1976).

A family composed of members that support and sacrifice for each other may be more likely to survive than other families, although individual family members may suffer the consequences of their sacrifices.

However, biological cooperation also occurs where kinship is absent, as in the symbiotic relationships between entirely different classes of organisms — such as ants and acacias "where the trees house and feed the ants which, in turn, protect the trees."[44] This kind of biological cooperation is based on reciprocity, and can only occur where repeated interactions are possible.[45] In other words, the ants will not develop tree-protecting behavior that benefits the food-providing trees unless they are frequently in a situation to benefit from such behavior. Clustering, or maintaining physical proximity, is a condition that encourages cooperation because it increases the proportion of repeat interactions with others in the cluster. Obviously, kinship itself is one way in which clustering might occur. Thus, kinship groups might develop cooperative behavior based both on the direct benefits to the genetic propagation of the group and the indirect benefits to the geographic local community that makes up the group.

However, in Axelrod's analysis, cooperative behavior will fail if repeated interactions are not assured. The cooperation works because an individual can retaliate against, or refuse to cooperate with, any acquaintance that previously proved to be noncooperative, and therefore, untrustworthy. Where the environment is more open to transitory interactions, cooperation is less likely to succeed, and exploitation and parasitism occur. It is no surprise that communal barn-raising takes place in close-knit communities, and not in big cities. If a noncooperative individual can disappear into an anonymous crowd, then there is no penalty for noncooperation. Thus, in order for cooperative behavior to succeed, there must be a high probability of repeated interactions, and a way for an organism to differentiate among those who cooperated in the past and those who did not. Axelrod noted that "[h]igher organisms avoid this problem by their well-developed ability to recognize many different individuals of their species . . . ."[46] When an organism is not able to differentiate among individuals, it can ensure reciprocity over repeated contacts by maintaining physical contact with the other, as with a hermit crab and its sea anemone partner. The idea here is that human beings are capable of remembering who was nice to them and who was not, so we do not have to rely on being physically chained together to develop altruistic behavior —although the prison movie genre often relies on this dynamic.

The parallels to racial interactions among human beings are striking in a number of ways. The idea that cooperation would be greater among groups that consider themselves kinship groups merges neatly with the mistaken, but wide-

44. AXELROD, *supra* note 41, at 90.
45. *Id.* at 92.
46. *Id.* at 100.

spread, conception of race as a biological category of inherited traits. Distrust along racial lines would be the natural corollary. Combining this kinship concept with the idea that greater trust and mutual benefit might occur among individuals that cluster helps to explain segregation preferences, even at minimal levels, which Schelling showed produces such drastic results.

However, racial identity is not the same as kinship. People trusting people of the same race are not trusting relatives. On the other side of the spectrum, there are interracial families in which kinship crosses racial boundaries. Thus, as applied here, racial identity might be seen to operate as the misidentification of kinship.

Moreover, it is well established that people cannot consistently identify individuals across racial lines.[47] Thus, not only does residential segregation lead to a lack of opportunity for repeated interactions, but people are often unable to identify accurately individuals of different races, and both contribute to an overall lack of cooperation. In this scenario, race serves as a proxy for the prerequisites for cooperation that Axelrod identifies. By their nature, segregated communities fail to require repeated interactions across racial lines. Unsurprisingly, studies repeatedly show a relative lack of empathy and altruism across racial lines.[48] As free market economics continues to encourage a world of independent, relatively anonymous individual interactions, trust among clusters continues to break down, and as with fish in the open sea (as compared to fish limited in fixed ranges) exploitation and parasitism result, both generally and along racial lines.

Axelrod saw that the feedback effects present in game theory simulations could support self-perpetuating racial stereotypes and mutual hostility, which could cause minority groups to self-segregate in search of more cooperative enclaves.[49] Both groups would suffer losses from the failure to cooperate, but groups with fewer members would suffer most, simply from having fewer cooperative individuals with whom to interact.[50] Although Axelrod spoke of labels and stereotypes, the development of racially distinct patterns of cooperation does not require conscious distinctions. Whether altruistic behavior is based on conscious determinations or unconscious reactions, the underlying structure of the development of cooperative intergroup dynamics remains. After all, bait balls and flocks involve less discerning organisms: fish and birds. These creatures presumably hold no malice for each other, if they have any consciousness at all, and yet will develop clear patterns of cooperation or exploitation based on these principles.

47. *See, e.g.*, Sheri Lynn Johnson, *Cross-Racial Identification Errors in Criminal Cases*, 69 CORNELL L. REV. 934 (1984).

48. *See, e.g.*, Douglas Linder, *Juror Empathy and Race*, 63 TENN. L. REV. 887 (1996).

49. AXELROD, *supra* note 41, at 148.

50. *Id.*

C. Ant Trails

Now recall the problem of the ant trail. Ants exude a chemical trail that they can then "read" with their antennae. The reason ants form a single-file line is that each ant is reading and following the same chemical markers. Considering that each of the ants following the scent is laying down more of the same chemical, causing the signal to become stronger, it is not hard to see that once a number of ants are following the same trail, there is a feedback effect; as more ants follow that trail, more ants are attracted to follow the trail.[51]

This still does not solve the problem of why ants end up following a short, direct path between a food source and the nest. After all, there are numerous ants out foraging for food sources at any given time. If they simply went out in straight lines, their odds of finding food would not be very good. Instead, an ant wanders across the terrain until it finds a food source, then haplessly traces back its own meandering bread-crumb pheromone trail round and about until it gets back to the nest.

At the same time, the chemical marker left by the ants dissipates over time and distance. Therefore, as the trail becomes longer, the signal grows weaker. If a second ant comes upon the same food source by a shorter path, that ant will return to the nest faster, and because of both shorter distance and time, that shorter pheromone trail will give a stronger signal. In this case, that trail has a double dose of pheromone, one from the trip out and one from the return. Assuming that the first ant has not returned, other ants near the nest would follow the second ant's trail back to the food rather than the single-scented trail from the first ant. These ants would add their own chemicals to the path, making the signal even stronger.[52]

What is important about this example is that although ant communication is quite complex,[53] the shortest-trail algorithm does not require any passing of a very specific message. The second ant does not have to convince anyone that it has found a shorter trail. No ant has to go out, measure the trails, and report back to the nest to collect food most efficiently. The nature of the chemical is that it dissipates quickly enough to distinguish between longer and shorter paths, but not so quickly that the food cannot be found. Computer programmers have been able to use this model to solve notoriously difficult practical problems about efficient routing.[54]

51. *See* BERT HOLLDOBLER & EDWARD O. WILSON, THE SUPERORGANISM 61–63 (2009).

52. KENNEDY & EBERHART, *supra* note 37, at 105–06.

53. *See* BERT HOLLDOBLER & EDWARD O. WILSON, JOURNEY TO THE ANTS: A STORY OF SCIENTIFIC EXPLORATION 41–59 (1994).

54. KENNEDY & EBERHART, *supra* note 37, at 105–09.

1. Swarm Intelligence

The ant trail is one of many examples of complex behavior among insects without hierarchical or central control. Finding and cultivating food, tending to nests, regulating temperature, caring for the young, interacting with (and sometimes waging war against) neighboring colonies, generating the establishment of new colonies—all of these complex social tasks are coordinated through a network of chemical signals and collective behavior, rather than by issuing directions. This complex communication system and caste-based division of labor has led biologists to describe the insect colony as a "superorganism":[55] as many as twenty million distinct members functioning as a single living entity.

Computer scientists developing models for artificial intelligence have studied the work of entomologists and other natural scientists in discerning how simple insects can collectively perform extremely complex tasks efficiently and without direction. The field is called "swarm intelligence," [56] which emphasizes "distributedness, direct or indirect interactions among relatively simple agents, flexibility, and robustness."[57] These are the characteristics that lend themselves to application to other computation problems. They reflect the fact that "many aspects of the collective activities of social insects are *self-organized*,"[58] and by modeling this self-organization, these scientists can design "artificial distributed problem-solving devices that self-organize to solve problems—swarm intelligent systems."[59] Indeed, Eric Bonabeau tells us that the "expression 'swarm intelligence' was first used by Beni, Hackwood, and Wang . . . in the context of cellular robotic systems, where many simple agents occupy one- or two-dimensional environments to generate patterns and self-organize through nearest-neighbor interactions."[60] This bears a striking resemblance to cellular automata.

For these purposes, Bonabeau asserts that self-organization relies on four basic ingredients: positive feedback, negative feedback, random fluctuation, and multiple interactions.[61] Pheromone-laden ant trails and network markets exemplify positive feedback. On the other hand, negative feedback balances and limits the rapid growth that positive feedback can prompt. For instance, there may be a limit on the number of ants that can get close enough to the pheromone trail to detect and follow it, or a maximum rate at which new phone

55. Kevin Kelly attributes the coining of this term to the great myrmecologist William Morton Wheeler. Kevin Kelly, *Hive Mind*, *in* INSECT LIVES: STORIES OF MYSTERY AND ROMANCE FROM A HIDDEN WORLD 147, 153 (Erich Hoyt & Ted Schultz eds., 1999).

56. *See* ERIC BONABEAU, MARCO DORIGO & GUY THERAULAZ, SWARM INTELLIGENCE: FROM NATURAL TO ARTIFICIAL SYSTEMS (1999).

57. *Id.* at xi.

58. *Id.* at 6.

59. *Id.* at 7.

60. *Id.*

61. *Id.* at 9–12.

lines can be effectively added to the network. A taste for variety or nonconformity could provide another negative feedback effect, causing some sizable proportion of agents always to select a different path or an unconventional purchase. For example, there was always a niche market for Apple computers. At a broader level, since market-based systems tend to rely on self-interested calculation and wealth maximization to fuel the network spiral, to the extent that market actors are motivated instead by compassion and contentment, these can operate as limiters as well. Contentment slows the hunger-driven march towards efficiency.

Another theory for the random fluctuation to which Bonabeau refers is stochastic adaptation. This is adaptation that contains randomness;[62] the classic example is biological evolution by natural selection through genetic mutation. An ant may discover a better route toward food by deviating from its path. Whether this stochastic element is introduced through a genetic instinct to wander or a physical limitation on the number of ants that can fit on a path is immaterial. Because this adaptation is random, however, multiple iterations are required to produce something akin to intelligence. It will take many generations of mutating ants to develop appropriately adaptive behavior, but ultimately, through multiple interactions by some minimum number of mutually tolerant individuals, self-organization emerges.

2. Stigmergy

In this example the ants need not communicate directly with each other. Although real ants give signals and pause at every interaction to exchange information through chemical scents and physical movements, the computer simulation works based only on ants following the chemical signals left on the ground by others, and leaving their own. The ants need not intend any broader outcome at all, nor do they even need to be aware of the existence of other ants in the colony. They need only follow the practice of emitting pheromones and following pheromone trails that they happen upon. There is no way of knowing whether ants are conscious at all or whether they are intending to communicate anything when they mark their trails.

This illustrates one of the important ways in which self-organization proceeds. Stigmergy is a pattern of self-organization that occurs indirectly, rather than through interactions between individuals.[63] Not only can complex structure develop based on rudimentary rules of communal behavior such as minimum tolerance levels or implicit biases, but communication and interaction between individuals is not necessarily required at all. Stigmergy is an overlooked aspect of self-organization. For example, termites construct colossal nests out of mud. The interior of the termite mound contains vast, soaring

62. *Id.* at 10.
63. *Id.* at 14.

vaults constructed with columns of mud topped by arched ceilings. The arch is considered a signal accomplishment of human architectural ingenuity. How do simple termites pull it off? All termites do is follow their simple instructions: they carry tiny amounts of mud imbued with a chemical scent and drop them on the ground. The scent signals other termites to place their mud on top, and the combined scent of the cluster of mudballs results in the construction of a mud column.[64] When two columns are close enough together, the scent draws termites to the side of each column closest to the other, and they deposit their mudballs on that side of the top of the column. The columns begin to curve towards each other, and eventually the arch is joined.

They key point is that the termites do not have to frequently interact with each other. The mud column itself, composed of mudballs mixed with pheromones, guides the construction of the arched vault. No termite architect has to draft blueprints. The nature of the simple behavioral rule the termites are following together with the nature of the mud organizes the construction of the termite nest, complete with a network of chambers and vents that work to provide an air conditioning system that maintains a constant internal temperature.[65]

Similarly, although ants communicate more directly, at the level of the pheromone path, no direct communication is needed. Indeed, the ants likely lay the pheromone trail without any conscious intent. By following the trail, the ant is interacting mostly with the trail itself. Nonetheless, the ants solve the complex mapping problem.

This is a non-intent based biological analog to the "structural discrimination" that race scholars often describe. By simply maintaining homes in their existing neighborhoods and favoring their kin with inheritance, White people create enclaves that outsiders cannot easily penetrate.[66] Their mud is simply home and family, and no racially conscious intent is required, but the walls they build are no less imposing. By simply engaging in one's preferred cultural practices, participating in communities of interest, and building institutions around which social life is organized, we create clubs, social structures and modes of communication that are alien and unavailable to outsiders and are as complex and impenetrable as any termite mound. Race may play no part in the behavior, but the structures are built nonetheless, and they fulfill an exclusive function regardless of intent. A termite—perhaps one from a different colony—that cannot read the mud, or an ant that cannot interpret the scent, will be utterly lost.

64. *See* LEWIS THOMAS, LIVES OF THE CELL 133–34 (1974).

65. *Id.*

66. BLACK WEALTH, WHITE WEALTH: A NEW PERSPECTIVE ON RACIAL INEQUALITY 145–89 (Thomas M. Shapiro & Melvin L. Oliver eds., 1996).

3. Cascades

a. The Evolution of Conventional Wisdom

Now let us consider some analyses of human behavior that resemble the path-making of ants. A cascade occurs when an individual's adoption of a particular position, opinion, belief, or norm is influenced by the positions, opinions, beliefs, or norms adopted by others.[67] It is called a cascade because the feedback effects among individuals all influenced by others result in exponential growth in numbers, and movement towards a single standard. Diverse individual trickles quickly coalesce into full-fledged floods through the cascading process.

There are different kinds of cascades. Information cascades operate when individuals base their beliefs or opinions in part on the beliefs or opinions of others.[68] One can reach independent conclusions, of course, but given the possibility that one's private information or reasoning might be wrong, it is ordinary to take into account what someone else thinks. One might ultimately conclude that another person is a lunatic and dismiss her opinion, but this conclusion is harder to reach when more than one other person holds that opinion. In fact, the more people holding that opinion, the stronger the inference—how could that many people be wrong?

This is normal. People don't operate by pure solipsistic reason alone. Rather, we take into account the possibility that others have more information or are simply smarter than we are. This arises in part from a commendable humility. Others may know something we don't know. Often enough, of course, the crowd will be right. (So if you see a line forming, get in it!). Thus we have an information feedback effect—an information cascade. The more people there are who believe something is true, the more people are likely to believe it.

A reputational cascade takes into account the fact that when we take a position we care not only about accuracy but also social compatibility; not only about getting the answer right, but also about what other people think of us, and sometimes they think less of us if we disagree with them or reach different conclusions than they do on a particular issue. [69] This reputation effect displays the same feedback characteristic as other cascades. If opinion is evenly split, taking one position or another may have little reputational impact. But the more people take one side, not only is it more likely that as a matter of information one will agree with their conclusion, but the more likely it is that if she disagrees with the common wisdom she will suffer reputational injury.

67. Cass R. Sunstein & Timur Kuran, *Availability Cascades and Risk Regulation*, 51 STAN. L. REV. 683, 685 (1999)

68. *Id.* at 685–86.

69. *Id.* at 686–87.

As a result, one might conceal her true position. No one wants to be thought of as being on the lunatic fringe. Thus not only can the apparent consensus on any given issue within a community be stronger—because of information cascades—than it would be if each person had independently assessed the merits of the case, but the consensus can appear even stronger than it actually is because of reputational cascades and the concealment of minority positions.

Together, an information cascade and a reputational cascade form an availability cascade.[70] In cognitive psychology, the availability heuristic is "a pervasive mental shortcut whereby the perceived likelihood of any given event is tied to the ease with which its occurrence can be brought to mind."[71] An availability cascade occurs when "expressed perceptions trigger chains of individual responses that make these perceptions appear increasingly plausible through their rising availability in public discourse."[72] This is a cascade that fills gaps left by limited imagination. This process can generate widespread mistaken beliefs. Thus when a plane blows up, an interpretation based on the readily available image of a terrorist attack can spread quickly and become ingrained in the public consciousness regardless of the lack of evidence for this interpretation.[73] Similarly, merit and malice are the dominant explanations available for people to make sense of racial inequality. One comes across each of these explanations in myriad forms and from varied sources, precisely because others have adopted one or the other of them based on what was available to them.

A cascade is essentially a pheromone trail—the conclusion gets stronger the more layers are added, or the more participants there are. Most people care what other people think, whether as a matter of confirming their information, as a matter of protecting their reputation, or as a matter of finding a narrative through which to ascribe meaning to events. As long as what other people think affects an individual's beliefs, people engaged in cascades are the cognitive equivalent of ants following pheromone trails.

b. Racial Polarization

Note that these cascades operate within groups of people that interact with each other. Because many Americans live in racially segregated communities, different racial groups might be expected to experience informational and reputational cascades based on different content. Professor Cass Sunstein has argued persuasively that sharing opinions within like-minded groups results in

70. *Id.*
71. *Id.* at 685.
72. *Id.*
73. *Id.* at 702.

group polarization.[74] Thus one might expect that there would be ideological polarization between racial groups. This is, of course, the case, particularly with regard to racial issues.[75]

Subtle stereotypes and race-related concepts that are not explicitly racist may also be supported by information cascades. For instance, the beliefs that people on welfare are lazy, that the accused are usually guilty, that relative success reflects relative merit, and relative failure reflects relative dysfunction are all beliefs that are subject to perpetuation through cascades and that buttress attitudes about the causes of racial equality.

c. Racial Identity

Racial identity itself can be affected by this kind of cascade. Timur Kuran argues that reputational cascades can cause extensive "ethnification"—the strengthening of ethnic norms and ethnic identity—to an extent not indicated by any intrinsic preference for ethnic activities.[76] Public ethnic norms solve a collective action problem: members of a community that adhere to visible signs of ethnic group membership have increased incentives for group solidarity. "By the logic of this argument, ethnic divisions will be seen as facilitating the provision of collective goods to ethnically defined subgroups, at the expense of communitywide collective goods. They will be interpreted as signs of *subgroup* loyalty inimical to *group* loyalty."[77]

Feedback effects also reinforce social segregation: "A Serb who spends more time with other Serbs than with Croats will, other things being equal, care more about her reputation among Serbs than about her reputation among Croats."[78] It follows that group ethnification spreads, as members of other groups respond with ethnification of their own.[79] Similarly, George Akerlof has noted that racial caste systems maintain themselves through a mechanism similar to reputational cascades, and that this system "works spontaneously, without direction of any individual or organization."[80]

74. CASS R. SUNSTEIN, WHY SOCIETIES NEED DISSENT 111–44 (2003).

75. Kuran thinks this process causes White Americans to falsify their preferences with regard to affirmative action. He argues that many may be concealing their true self-interested position against affirmative action as a result of liberal reputation cascades—the conventional wisdom, Kuran thinks, supports affirmative action even if most people really do not. TIMUR KURAN, PRIVATE TRUTHS, PUBLIC LIES 137–54 (1995). Of course, an information cascade regarding affirmative action could work in the other direction just as well—many seem convinced that affirmative action is outmoded and on its way out, and they are reinforced by the beliefs of their social groups and peers.

76. Timur Kuran, *Ethnic Norms and Their Transformation Through Reputational Cascades*, 27 J. LEGAL STUD. 623, 627–28 (1998).

77. *Id.* at 632.

78. *Id.* at 638.

79. *Id.*

80. George Akerlof, *The Economics of Caste and of the Rat Race and Other Woeful Tales*, 90 Q.J. ECON. 599, 611 (1976).

One observes this kind of dynamic among American racial groups. The literature of American racial identity is filled with stories of individuals being torn between a minority ethnic identity with its particular cultural practice and values, and assimilation into the broader majority and a more generic American identity. Charges of "acting White," often inferred from wardrobe choices or speech patterns, are claims of betrayal of subgroup loyalty, just as Kuran describes.

One of Kuran's points about ethnification is that once ethnic harmony in a society—a kind of equilibrium in social norms—is disrupted, there are more or less automatic processes in social relations that can drive that society quickly toward ethnic self-segregation.[81] He argues that ethnic hatred may therefore be a byproduct of this ethnification process rather than its cause. Informational and reputational cascades generate, and are reinforced by, cascades of fear and anxiety.[82] In this view racial stereotypes and racial hatred follow from racial segregation, rather than the other way around.

BEYOND METAPHORS

We have explored various biological examples of swarm intelligence and self-organization, and we have paused at moments to examine various possibilities for applying self-organization concepts to human behavior. Does the process of residential segregation resemble an automatic mathematical function? Is the formation of ant paths like the process of ethnification?

Now we review a sampling of various ideas developed in critical race theory and look at them through the lens of self-organization. When we direct our focus away from finding intentional racism and towards identifying aspects of racial inequality that are to some extent spontaneous and automatic, we find that much important work on the dynamics of racial inequality has already been done, and it follows the contours of the self-organization model laid out in this essay.

A. Privilege

Peggy McIntosh's famous essay on privilege has been a revelation to many.[83] McIntosh's simple, extensive list of numerous ways in which her ordi-

81. Kuran, *supra* note 76, at 647.

82. *Id.* at 648–49. Oddly, Kuran elsewhere argues that reputational cascades regarding the fear of being stigmatized as racist cause Americans to falsify their preferences and understate their intrinsic and self-interested opposition to affirmative action. TIMUR KURAN, PRIVATE TRUTHS, PUBLIC LIES: THE SOCIAL CONSEQUENCES OF PREFERENCE FALSIFICATION 137–54 (1995). In this case, he seems to overlook the informational and reputational cascades that could cause White Americans in particular to be opposed to affirmative action to begin with.

83. Peggy McIntosh, *White Privilege and Male Privilege: A Personal Account of Coming to See Correspondences Through Work in Women's Studies*, *in* CRITICAL WHITE STUDIES: LOOKING

nary life experience benefits from being White was extraordinarily influential.[84] By focusing on privilege rather than discriminatory intent, McIntosh found a way to convey inherent racial advantage effectively without claiming that the beneficiary of privilege is in any way a racist. For instance, when she writes "I can do well in a challenging situation without being called a credit to my race," we recognize her point that she hasn't done anything especially blameworthy.[85] However, in this example there is somebody else—the person who would indeed say of successful people of color that they are a credit to their race—who might be held at least somewhat responsible for the privilege McIntosh enjoys.

But other items on the list don't rely on any blameworthy person at all. For example: "I can go . . . into a supermarket and find the staple foods which fit with my cultural traditions."[86] Here we have an asymmetrical benefit—people from minority cultural traditions often cannot get their staple foods at the supermarket—but there is no villain imposing this result. Supermarkets are merely providing the food items for which there is sufficient demand. Of course, somebody makes a decision about what foods to stock, and that person may in any particular instance underestimate the demand for unfamiliar food based on cultural bias. But the point is that even if there were no such bias occurring, one would get the same result simply by matching supply with demand. This kind of privilege may simply be the automatic result of being in a minority group of a particular small size of less than critical mass.

To be more explicit, this kind of privilege exhibits positive feedback effects—the greater the market for majority-desired goods, the more widely available and affordable they will be, which in turn enhances their desirability. Privilege like this may also display stigmergy—no communication between consumers and suppliers is necessary beyond the act of consumption itself. Both simply interact with the goods, and collectively produce a situation in which the needs of some people are met better than the needs of others.

B. Status Production

Now consider the work of Richard McAdams on esteem payments.[87] McAdams addressed the question of self-sacrificing behavior on behalf of group cohesion.[88] He explicitly considers the example of White segregationists unwilling to make money from willing Black customers.[89] He theorized a sys-

BEHIND THE MIRROR 291 (Richard Delgado & Jean Stefancic eds., 1997).

84. *See, e.g.*, Stephanie M. Wildman, *The Persistence of White Privilege*, 18 WASH. U. J.L. & POL'Y 245, 246 (2005).

85. McIntosh, *supra* note 83, at 293.

86. *Id.*

87. Richard H. McAdams, *Cooperation and Conflict: The Economics of Group Status Production and Race Discrimination*, 108 HARV. L. REV. 1003 (1994).

88. *Id.* at 1007.

89. *Id.* at 1067.

tem of status production in which social approbation resulting from group interaction might constitute a kind of esteem payment that would compensate even a martyr for his ultimate sacrifice on behalf of a group.[90] Restaurant owners who forewent the profits from potential Black customers could be amply compensated by the social status they received in White segregationist communities. This closely resembles the concept of reputation cascades supporting ethnic segregation as developed by Timur Kuran.[91] It also exemplifies Axelrod's model for a close-knit community engaging in multiple repeated interactions producing cooperation.[92]

C. Implicit Bias

Aware that survey respondents self-reporting on the prevalence of racial stereotypes and discrimination might either misrepresent their opinions or be unaware of subconscious bias, social psychologists have developed experiments to test implicit associations. They theorized that an association between race-associated images and certain reactions—between racially identifiable Black faces and words associated with "bad," for instance —might occur at an automatic and subconscious level.[93] This is implicit bias. Rather than asking questions regarding racial bias directly, their methods involve asking subjects essentially to sort racially paired and contrasting words and images at a very high speed—too fast for any conscious process to intervene. What they discovered, and what a multitude of subsequent experiments have confirmed, is that implicit bias is pervasive and strong. Famously, one experiment showed subjects under time pressure in a video-game simulation more likely to mistakenly shoot innocent Black people—those holding a wallet or cell phone rather than a gun—and more likely to mistakenly spare a guilty White person—holding a gun.[94] Presumably these subjects implicitly associated Blackness with criminality or danger, and Whiteness with innocence or safety. Subsequent experiments have shown that implicit bias is strongly linked to many different kinds of racially disparate behavior.[95]

The principal critique of implicit bias research is that it does not—and could not—establish that any particular employment action, for example, was the result of implicit bias.[96] The general problem with this critique of implicit

90. *Id.* at 1058–63.

91. KURAN, *supra* note 82.

92. AXELROD, *supra* note 41, at 92–93.

93. *See* Anthony G. Greenwald & Linda Hamilton Krieger, *Implicit Bias: Scientific Foundations*, 94 CALIF. L. REV. 945 (2006); Kang, *supra* note 15, at 1507–14.

94. Joshua Correll et al., *The Police Officer's Dilemma: Using Ethnicity To Disambiguate Potentially Threatening Individuals*, 83 J. PERSONALITY & SOC. PSYCHOL. 1314, 1315–17 (2002).

95. Greenwald & Krieger, *supra* note 93, at 961; Kang, *supra* note 15, at 1514.

96. *See* Gregory Mitchell & Philip E. Tetlock, *Antidiscrimination Law and the Perils of Mindreading*, 67 OHIO ST. L.J. 1023 (2006).

bias research is that it is rooted in the malice narrative, and its focus is therefore on defending individuals charged, unfairly perhaps, with being racists. In contrast, network economics, rather than being concerned with sniffing out or punishing racists, focuses on the production of racial inequality as the result of very small changes in initial dispositions that can, through escalating feedback effects, push a system toward a racially exclusive standard. We see through Thomas Schelling's work in game theory that very small and individually benign shifts in preference can have large and unintended social consequences. Rather than indicting individuals, implicit bias research reveals the small nudges or shifts in behavior that collectively produce complex systemic effects. The critics may well be right that implicit bias research is not enough to explain any particular instance of discrimination, but it can nonetheless help us understand the world of racial inequality.

D. Stereotype Threat

Stereotype threat is the flip side of implicit bias. Rather than trying to measure the stereotypical associations people have, it measures the effect of being afraid that others will stereotype you. Thus, studies show that Black students perform poorly on academic tests when being tested in an environment that triggers the stereotype of Black intellectual inferiority. Their performance improves when they are under the impression that the test is not an assessment of intellectual prowess. Follow-up studies have shown that under pressure of stereotype threat, White men cannot jump and White students cannot do math.[97] That this can demonstrate a form of positive feedback is clear—the greater the concern about academic performance, the poorer the performance, which in turn triggers greater concern. It doesn't have to be a culturally biased test, and there doesn't have to be a racially biased test writer or grader or proctor. It is simply a student and a test and a complex world of racial stereotypes and associations that produce broad racial inequality in outcomes that have nothing to do with the quality being tested.

E. Microaggression

A microaggression is behavioral tic that people exhibit when confronting something or someone with whom they bear a strong implicit association.[98] They may lean away, sigh, or raise an eyebrow. Microagressions seem trivial, but the can have a significant impact on, for example, the performance of an

97. *See* Joshua Aronson, Michael J. Lustina, Catherine Good, Kelli Keough, Claude M. Steele & Joseph Brown, *When White Men Can't Do Math: Necessary and Sufficient Factors in Stereotype Threat*, 35 J. EXPERIMENTAL SOC. PSYCHOL. 29 (1999); Claude M. Steele, *Thin Ice: "Stereotype Threat" and Black College Students*, ATLANTIC MONTHLY, Aug. 1999, at 44. For an overview of the literature, see Kang, *supra*, note 15, at 1519–23.

98. Peggy C. Davis, *Law as Microaggression*, 98 YALE L.J. 1559, 1565–66 (1988).

interviewee. Peggy Davis has explored the literature surrounding microaggressions and concluded that they diminish Black self-confidence.[99] If we consider the automatic nature of implicit bias we see that microaggressions can contribute to a feedback effect: microaggression contributing to poor Black performance, which confirms the negative associations giving rise to the microaggression. Again we see positive feedback, and we see relatively benign behavior producing racially unequal results.

CONCLUSION: WHITENESS AS A SELF-ORGANIZING SYSTEM

Our understanding of racial inequality is itself subject to some of the effects we have been considering. Observed racial inequality requires interpretation and is therefore subject to information, reputation and availability cascades. The twin narratives of merit and malice are both readily available, but here the dynamics of adoption diverge. The narrative of merit puts relatively successful White people in a positive light, so the reputational effects for that narrative will be stronger for White people, especially if they live and work in segregated White communities. Such a person's neighbors and colleagues will think more highly of her if they think she regards them as meritorious rather than as racists. The implication of the malice narrative that Whites are racist creates a powerful negative feedback loop that makes this narrative appear farfetched to White people. If a neighbor's success is based on racial discrimination, then what about one's own success? In this light, the general inability to internalize and accept studies regarding the mechanics of racial inequality might be explained as an adherence to an available idea: the background presumption of a working meritocracy as the explanation for persistent racial inequality.

Conversely, the narrative of malice frames Black people as innocent victims of racism, and one might expect that reputation cascades to reinforce this narrative, especially in segregated Black communities. The narrative of merit leaves Black people to explain their deficiencies and will suffer a negative feedback loop that will make this explanation appear implausible. From this perspective, reports regarding the production of racial inequality are seen as simply other words for racism.

The conflict between disparate impact theory and color-blind Equal Protection doctrine replicates stale arguments about racism and discrimination. The Equal Protection approach is more idealistic, insisting on adherence to the ideal of color-blindness in all conscious and intentional endeavors. To some extent, even the disparate impact approach is sometimes characterized as an effort to root out various forms of concealed or perhaps unconscious racism. To this extent the disparate impact standard offers a pragmatic and somewhat compro-

99. *Id.*

mised view that some benign violations of the anti-discrimination principle are justified as counters to more serious violations. But both of these approaches limit their concept of harm to some form of malice or discrimination. If inequality is not caused by discrimination at all, then an Equal Protection jurisprudence focused on discriminatory intent cannot hope to achieve equality, and a disparate impact doctrine based on hidden discrimination is in essence a false accusation.

It is my hope that the examples discussed in this Essay will contribute to a new kind of discussion about racial inequality and what to do about it. These images and metaphors might eventually contribute to a reimagining of both disparate impact and equal protection to allow law to respond to inequality that is the result of neither discrimination nor a simplistic form of natural selection. But it will not be easy to break through the twin narratives that frame the debate. The science of complexity itself has discovered a resistant audience.

After the biologist and the mathematician published and presented the paper describing the ability of slime mold cells to self-aggregate, biologists didn't understand it. For another decade, they continued to search for "pacemaker" cells. Evelyn Fox Keller, the scientist who co-authored the paper, commented, "It amazes me how difficult it is for people to think in terms of collective phenomenon."[100] Similarly, in response to all of the studies and discourse that has arisen regarding implicit bias and implicit association tests, a backlash has arisen. Gregory Mitchell and Philip E. Tetlock argue quite strenuously that the studies are flawed, the alleged discrimination is not irrational, and there is no link between implicit bias tests and actual behavior in the real world. Their principal complaint seems to be that people will behave better in real life than in a controlled experiment. It seems to me that they simply cannot get past the idea that unconscious and automatic processes can unfairly impact racial equality.

In discussing the mechanics of implicit bias, Jerry Kang observes how subconscious processes work: "The point here is not merely that certain mental processes will execute automatically; rather, it is that those implicit mental processes may draw on racial meaning that, upon conscious consideration, we would expressly disavow. It is as if some 'Trojan Horse' virus had hijacked a portion of our brain."[101] Kang suggests here that in experiment after experiment, subjects who expressly disavow all forms of racial stereotyping are nonetheless unable to prevent their synapses from firing more quickly to associate Black faces with the word "lazy" than White faces and "lazy." Without knowing it, and indeed insisting that we are not doing it, we rate Black applicants lower; we interview them in a more hostile manner; we mistakenly shoot them more frequently.

100. JOHNSON, *supra* note 22, at 16.
101. Kang, *supra* note 15, at 1508.

The image of a Trojan Horse virus hijacking our brains may seem far-fetched, but again nature provides complementary examples. There are certain hairworms that live in the bodies of grasshoppers. They grow in the body cavity until they occupy virtually all of it, except for the legs and the head. When they are ready, they release a protein that infects the grasshopper's brain, driving it to jump into pools of water. There, the adult hairworm, now several times longer than its host's body, exits the dying carcass so that in can breed in the water.[102]

Similarly, certain parasitic worms also invade the bodies and brains of ants, causing the ants to climb to the tips of blades of grass. There, the ants are more likely to be eaten by sheep or cows, the stomachs of which the worm needs to get to in order to continue its life cycle.[103] It used to be that scientists studying suicidal behavior by parasitic hosts would reason that the host was committing suicide to enhance the ability of nearby genetic kin to survive, by sacrificing itself to kill the parasite before it could mature.[104] But we should remember that evolutionary processes don't always benefit the carrier. Sometimes they benefit the parasite.

The examples raised in this Essay raise certain questions about free will and the nature of consciousness. All of these self-organizing features of Whiteness that produce racial inequality suggest a certain automaticity, a certain mindlessness. Am I suggesting that human behavior will not respond to conscious intervention; that there is, in the end, no free will?

The larger philosophical question raised here is surely beyond the scope of this short Essay. I am satisfied to have brought the question to this point. A less grandiose conclusion might simply be that right-thinking human beings ought to be aware that it will take conscious intervention to reverse unfair racial inequality created by these processes. So in a sense this is one more exhortation to try harder.

But this limited suggestion fails to capture the objection. Part of the problem of invoking the natural world is the strong narrative that nature has a moral valence. To say that a process is natural can seem to be to claim 1) that it is good, and 2) that it is inevitable. Even if it is clear in my work that the natural processes that bring about racial inequality have nothing to do with intrinsic merit, some questions remain, why and how do you fight nature? If racial inequality is natural, then this work carries with it an air of futility.

The parasite example demonstrates the other side of nature. Powerful au-

102. James Owen, *Suicide Grasshoppers Brainwashed by Parasite Worms*, NAT'L GEOGRAPHIC NEWS, Sept. 1, 2005, http://news.nationalgeographic.com/news/pf/46086836.html.

103. *Dan Dennett on Dangerous Memes*, TED BLOG (July 3, 2007), http://blog.ted.com/2007/07/dan_dennett_on_2.php.

104. *See, e.g.*, Deborah R. Smith Trail, *Behavioral Interactions Between Parasitese and Hosts: Host Suicide and the Evolution of Complex Lifestyles*, 116 AM. NATURALIST 77 (1980).

tomatic processes are good for some, but unquestionably bad for others. The grasshopper, I think, would object to the hairworm. The efficiency of an ant colony is no solace to the losing colony, or to the stranger ant, lost in a hive of scents it cannot decode. Viruses, parasites, and cancer are all natural processes that exploit feedback effects.

Most self-organizing systems include limiting vectors, negative feedback forces that constrain the expansion of the system beyond its capacity. Leading self-organization scholar Stuart Kauffman argues that complex systems always evolve to edge of chaos. Stochastic variation disrupts systems that would otherwise be so rigid that they fail to progress; structural order imposes limits that would otherwise spiral out of control into chaos.[105] Cancer, in particular, is thought to result from the failure of limiting systems to stop exponential and unrestricted growth of cellular systems. It has been suggested that paying attention to complex systems may lead the way to a cure for cancer.[106]

For our purposes, perhaps the processes that produce persistent racial inequality amount to a cancer. How might this insight lead to new ways forward? Here we might look back to biology for cues. Cancer spirals out of control when limitations on growth fail. What limitations have failed? I would suggest as an idea to be further developed in future work, that for thousands of years the values of self-interest and ambition that fuel the meritocratic impulse have been mitigated by broadly taught principles of universal compassion and empathy. What allows the tumor to grow is a rigid ideological commitment to free market principles, represented here by the narrative of merit. The commitment to the story of free markets works to weaken prior commitments to compassion.

Here is the question to which this essay has led: What, if anything, are you obligated to do if you are the beneficiary of racial inequality that is not your fault, but which you also have not earned? This is perhaps a dangerous question for a progressive scholar to ask, as it raises the prospect that the answer will be "nothing." A reader might conclude that if we have done no wrong we are obligated to do nothing but collect our benefits and thank our good fortune. Moreover, this essay might free people to give that answer, as its emphasis on automatic and natural processes might be said to let people off the hook, and to have given up guilt as a motivating factor. So it is a dangerous question, but it is no more dangerous for having been asked, as opposed to having been left unstated.

Return for a moment to disparate impact theory. The Supreme Court invented the disparate impact test early in the development of discrimination law

105. *See* STUART KAUFFMAN, AT HOME IN THE UNIVERSE: THE SEARCH FOR LAWS OF SELF-ORGANIZATION AND COMPLEXITY 90 (1995).

106. *See* Ivo P. Janecka, *Cancer Control Through Principles of Systems Science, Complexity, and Chaos Theory: A Model,* 4 INT'L J. MED. SCI. 164 (2007).

in the case of *Griggs v. Duke Power Company.*[107] *Griggs* involved a company in which the workforce was rigidly stratified along racial lines, and in the wake of the passage of the Civil Rights Act of 1964, the company had adopted facially race-neutral rules regarding qualifications for promotion that maintained that stratification. Commentators have noted that old-fashioned racist discriminatory intent likely explains the sequence of events, and it would have been enough for the Court to have found a way to make that inference, rather than to create doctrine that established that discriminatory intent was not required at all. And yet, today's environment presents the issue anew. What if the *Griggs* scenario were in front of us today, without the suspicious factual history? Some historical accident creates rules that happen to produce deeply unequal results along racial lines. Through no one's fault, one group of people, equally competent and meritorious, gets the short end of the stick. What are we obligated to do?

My own view is that this question is vital, and that we are ready for it. The will exists to do what it takes to bring about progress towards greater racial equality. The sociologists and political scientists and lawyers have done their work; the mechanisms of the reproduction of inequality have been detailed and described and confirmed in many different ways. Yet for all of that, the rhetoric of merit and malice continues to dominate any public discussion about race. These tired narratives bring with them deep layers of White guilt and Black shame, both teetering on the edge of a defensive rage that warps and impedes any effort to move forward. What this Essay attempts is to lay out a way to move past both guilt and shame and present the moral question plainly: what is your responsibility to a disadvantaged sister or brother? I suspect the reader will want to look to his or her own sources for the answer to this question. At any rate, I leave my own development of this theme for another time. But this is the core; all the rest is fog. And if the answer is that we each bear moral responsibility to the disadvantaged other for our unearned privilege, then that moral responsibility must ultimately be the foundation for a disparate impact theory of discrimination.

107. 401 U.S. 424 (1971).