# THE CONCEPT OF CRITICAL MASS IN LEGAL DISCOURSE

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## INTRODUCTION

The concept of critical mass has increasingly become an important means of describing social, political and legal phenomena. Indeed, there seems scarcely an area of social or political activity that is exempt from its reach. People talk about the need for a critical mass of women in management so as to transform the attitudes of coworkers towards women mangers in the corporate field,[1] and in politics so as to transform "political agenda, political culture and public policy."[2] They attempt to understand and predict the critical mass that will encourage jaywalking against a red light on a busy intersection,[3] turn hesitant student claps into applause for a teacher on the last day of class,[4] convince alumni to contribute to a school's endowment,[5] lead to racial integration or segregation of neighborhoods or schools,[6] and encourage individuals to become bilingual.[7] The notion of critical mass has even been drafted as a means of understanding and explaining aspects of the

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[1] *See* ROSABETH MOSS KANTER, MEN AND WOMEN OF THE CORPORATION (1977); Rosabeth Moss Kanter, *Some Effects of Proportions on Group Life: Skewed Sex Ratios and Responses to Token Women*, 82 AM. J. SOC. 965 (1977) [hereinafter Kanter, *Some Effects of Proportions on Group Life*]; Monique Lortie-Lussier & Natalie Rinfret, *The Proportion of Women Managers: Where is the Critical Mass?*, 32 J. APPLIED SOC. PSYCH. 1974 (2002).

[2] *See* Sandra Grey, *Does Size Matter? Critical Mass and New Zealand's Women MPs*, 55 PARLIAMENTARY AFFAIRS 19, 20 (2002).

[3] *See* THOMAS C. SCHELLING, MICROMOTIVES AND MACROBEHAVIOR 92-93 (1978) [hereinafter SCHELLING, MICROMOTIVES].

[4] *Id.* at 93.

[5] *See* GERALD MARWELL & PAMELA OLIVER, THE CRITICAL MASS IN COLLECTIVE ACTION: A MICRO-SOCIAL THEORY 1 (1993).

[6] *See* SCHELLING, MICROMOTIVES, *supra* note 3, at 93-94; *see also infra* Part II.

[7] *See* April Linton, *A Critical Mass Model of Bilingualism Among U.S.-Born Hispanics*, 83 SOC. FORCES 279, 288 (2004) ("Most people base their language decisions at least in part on what those around them are doing, or on what they expect others to do. A critical mass of others who make a given choice often adds to one's personal incentives to make the same choice.").

conflict in Iraq,[8] the development of social norms,[9] and the emergence of customary international law.[10] Indeed, the phrase shows up in almost all fields of social activity.[11] But in each of the above circumstances, the phrase is simply invoked as if it carried its own meaning, with no analysis or explanation of why it would make sense to invoke it in the particular circumstance.

Although the concept of critical mass is now commonly invoked in the social, political, and legal domains, it has a scientific origin. In the scientific world, the phrase is used to refer to the precise minimum level of fissionable plutonium or uranium that is required to start and sustain a chain reaction of nuclear fission which will in turn lead to explosion.[12] In its scientific sense, critical mass can, therefore, be said to describe three conditions: the existence of a precise minimum level of the required material for a change to take place; a change that is sudden and transformative; and that the change is not simply a function of a minimum level of the resource but also a function of how elements of

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[8] *See* Thomas Friedman, *D-Day in Iraq*, N.Y. TIMES, June 10, 2004, at A27 ("If the training stays on schedule, says General Petraeus, a critical mass of trained Iraqi Army, civil defense, and police forces should be up and running by January, in time for elections."). President George W. Bush is quoted by Senator Joseph Biden as having said that "[a] critical mass of events is taking the region in a hopeful new direction." Senator Joseph Biden, At the Tipping Point: Democratization in the Middle East, Remarks to the Democratic Leadership Council (March 15, 2005), *available at* http://ndol.org/ndol_ci.cfm?contentid=253239&kaid =106&subid=122.

[9] "What is true of social activities in general is often true of social norms in particular. Social norms may shift when, and because, enough actors change their behavior that a tipping-point is crossed." Melvin A. Eisenberg, *Corporate Law and Social Norms*, 99 COLUM. L. REV. 1253, 1264 (1999) [hereinafter Eisenberg, *Corporate Law and Social Norms*].

[10] "[C]ustomary international law . . . is the law that develops over time as states act in a certain way out of a sense that the behavior is not merely good policy but legally required (the notion of *opinio juris*). A rule requiring states to undertake a particular act 'crystallizes' when some *critical mass* of states engage in the behavior with the sense of obligation . . . ." Steven R. Ratner, *Is International Law Impartial?*, 11 LEGAL THEORY 39, 57 (2005) (emphasis added).

[11] Thomas C. Schelling observes: "The principle of critical mass is so simple that it is no wonder that it shows up in epidemiology, fashion, survival and extinction of species, language systems, racial integration, jaywalking, panic behavior, and political movements." Thomas C. Schelling, *Hockey Helmets, Concealed Weapons, and Daylight Savings: A Study of Binary Choices with Externalities*, 17 J. CONFLICT RESOL. 89 (1978), *reprinted in* SCHELLING, MICROMOTIVES, *supra* note 3, at ch. 5 [hereinafter Schelling, *Hocky Helmets*]. The phrase was also invoked to describe aspects of post-Katrina New Orleans. Eliza Barclay, *As Locals Struggle, Migrants Find Work in New Orleans,* S.F. CHRON., Oct. 12, 2005, A1, at A19 (referring to the movement of many Latino migrants to the Gulf Coast to participate in the reconstruction of the area, which may alter the demography of New Orleans and other parts of the Gulf Coast, an academic is quoted as saying: "If New Orleans reaches a *critical mass* of migrants, it could become a destination point for new migrants." (emphasis added)). People also refer to the critical mass that would lead to brain drain from developing to developed countries. *See* Lisa Leiman, Comment, *Should the Brain Drain be Plugged? A Behavioral Economics Approach*, 39 TEX. INT'L L.J. 675, 683-84 (2004).

[12] *See* Schelling, *Hockey Helmets, supra* note 11, at 89 ("An atomic pile 'goes critical' when a chain reaction of nuclear fission becomes self-sustaining; for an atomic pile, or an atomic bomb, there is some minimum amount of fissionable material that has to be compacted together to keep the reaction from petering out.")

that resource interact with one another.[13] That this term with scientific origin has increasingly played a prominent role in the understanding of the "physics of society" is not surprising, for the application of physical methods to social problems has been with us for a long time, at least since Thomas Hobbes' attempt at a scientific explanation of politics.[14] Indeed, Phillip Ball argues persuasively that the development of scientific measurement of society paralleled the growth of statistical physics.[15]

While there is a degree of certainty as to what the phrase refers in the scientific realm, there does not seem to be such clarity in relation to the application of the phrase in the social and political world. Indeed, the term's clarity has not matched its popularity. It may even be that its popularity is, in fact, partly a function of its vagueness and elasticity that allow people to invoke it in various activities of social and political life.[16] Sometimes the phrase is used to refer to specific and empirically verifiable minimum numbers of people or levels of resources required for a social activity to succeed or fail, analogous to the phrase's use in the scientific world.[17] Other times, however, the phrase seems to be used not as an analogy but as a metaphor, simply to indicate that people's actions or behavior depend on what others do or on what they expect others to do without an attempt to specify whether there is a minimum number or level of resource to trigger those actions or behavior. "For a physicist," say Pamela Oliver and her colleagues, "the critical mass is the amount of radioactive material that must be present for a nuclear fission explosion to occur. . . . [but s]ocial movement activists and scholars often use the term in a loose metaphorical way to refer to the idea that some threshold of participants or action has to be crossed before social movement 'explodes' into being."[18]

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[13] "The critical mass is the minimum mass of uranium that is needed before a typical neutron emitted near the center of the sphere will likely collide with a uranium nucleus before reaching the outer surface." Alan Lightman, *Megaton Man*, N.Y. REV. BOOKS, May 23, 2002, at 35.

[14] *See* THOMAS HOBBES, LEVIATHAN (Michael Oakeshott ed., 1962). The phrase "physics of society" is Philip Ball's. *See* PHILIP BALL, CRITICAL MASS: HOW ONE THING LEADS TO ANOTHER 71 (2004).

[15] *See* BALL, *supra* note 14, at 69 (referring to "the days when physical science and social science were the twin siblings of a mechanistic philosophy and when it was not in the least disreputable to invoke the habits of people to explain the habits of insensate particles").

[16] In an earlier work I looked at a similarly popular and yet elastic and indeterminate concept, the idea of the *role model*, whose indeterminacy and elasticity, I argued, "allow[ed] people to invoke [it] to assert varying normative positions under various circumstances without actually making an extended argument to defend these positions." Adeno Addis, *Role Models and the Politics of Recognition*, 144 U. PA. L. REV. 1377, 1380 (1996) [hereinafter Addis, *Role Models*].

[17] *See* L. R. JONES, UNIVERSITY BUDGETING FOR CRITICAL MASS AND COMPETITION 40 (1985); Pamela Oliver, Gerald Marwell & Ruy Teixeira, *A Theory of Critical Mass I. Interdependence, Group Heterogeneity, and the Production of Collective Action*, 91 AM. J. SOC. 522, 522-3 (1985) [hereinafter Oliver et al., *A Theory of Critical Mass I*]; *see also* Schelling, *Hockey Helmets, supra* note 11, at 89; SCHELLING, MICROMOTIVES, *supra* note 3, at 94.

[18] *See* Oliver et al., *A Theory of Critical Mass I*, *supra* note 17, at 524.

The purpose of this Article is to look closely at the way the notion of critical mass has been appropriated in legal discourse. Even though it was not the first time that the phrase was invoked in the context of legal discourse, it is because of its recent role in a high profile United States Supreme Court decision involving affirmative action that the phrase reentered legal and popular consciousness with new vigor.[19] If one were to glance through the majority and dissenting opinions of the Supreme Court in *Grutter v. Bollinger*,[20] the affirmative action decision involving admission policies of the University of Michigan School of Law, as well as the oral arguments preceding that decision, one would be struck by how much each side of the judicial divide thought depended on the concept.

This Article will explore whether the notion of critical mass is used in the legal domain as an analogy or as a metaphor and whether either use is jurisprudentially and conceptually coherent and defensible. In this sense, the article can partly be seen to be a "biography of an idea," to use Malcolm Gladwell's description of his book on "tipping point."[21] But the Article will also explore some of the practical and conceptual consequences of appropriating the notion of critical mass in legal discourse, specifically in the affirmative action area. How, for example, does one reconcile the reality of collective action inherent in the idea of critical mass with the announced goal that part of the purpose of using critical mass in the affirmative action area is to ensure that individual perspectives and judgments are cultivated?

The Article will also briefly explore the implication of the notion of critical mass to the development of social norms and social movements generally. If the success of a social activity is dependent on the existence of a critical mass of actors or resources, would change of, or shift in, social norms be the result of "enough actors chang[ing] their behavior [such] that a tipping-point is crossed"?[22] The notion of critical mass is regarded as central to the study of collective action. What does critical mass tell us about the development and sustenance of groups that are quintessential collective actors, social movements?

An inquiry into and clarification of the notion of critical mass in the legal domain becomes important for two reasons. First, and more narrowly, after *Grutter*, the fate and defensibility of affirmative action in college admissions programs seemed to be tied to the idea of critical mass and how the concept is understood. Indeed, many of the

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

20 *Id.*

21 *See* MALCOLM GLADWELL, THE TIPPING POINT: HOW LITTLE THINGS CAN MAKE A BIG DIFFERENCE 7 (2000) ("*The Tipping Point* is the biography of an idea, and the idea is very simple."); *see also* Addis, *Role Models*, *supra* note 16.

22 *See* Eisenberg, *Corporate Law and Social Norms*, *supra* note 9, at 1264.

challenges to affirmative action programs in relation to college admissions are likely to revolve around the question of what constitutes a critical mass in a given context. Justice Scalia predicted or suggested as much when he observed that future "suits may claim that the institution's racial preferences have gone below or above the mystical *Grutter*-approved 'critical mass.'"[23] Second, and more generally, the notion of critical mass appears promising as a means of exploring the process through which norms emerge and change. After all, the notion of critical mass is about the conditions, the thresholds, under which change or transformation occurs.

The structure of the article is as follows. Part I briefly introduces the idea of critical mass and its scientific origin. Part II explores the appropriation of the concept in the legal domain, especially in the affirmative action area. As Part II shows, there has not been extensive or sustained use of the term in the legal field. And when the phrase has been invoked, it appears to have been used as an adornment of a conclusion rather than as a tool of analysis. What Nancy Fraser and Linda Gordon observed about the word "dependency" equally applies to the phrase "critical mass." It has become a "keyword" carrying "unspoken assumptions and connotations that can powerfully influence the discourse[ it] permeate[s]—in part by constituting a body of *doxa*, or taken-for-granted commonsense belief that escapes critical scrutiny."[24]

Part III turns to the role of the concept of critical mass and examines in some detail the purposes for which the admission of a critical mass of minority students in colleges and universities is said to be necessary. That is, the section explores the public good(s) to be produced through the admission of a critical mass of minority students. Put simply, this section attempts to supply answers to the question: "What is the equivalent of the chain reaction that is supposed to be started and sustained through a critical mass of fissionable plutonium or uranium?" The section explores the various purposes that have been advanced or could be advanced as requiring a critical mass of minority students for their actualization. Specifically, I argue that there are four potential purposes (public goods) for which the admission of a critical mass of minority students may be required: remedying past discrimination, sociological legitimacy (or what Justice Thomas has derisively called "racial aesthetic"),[25] role modeling, and the enrichment

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[23] *See Grutter*, 539 U.S. at 349. Indeed, Justice Scalia even expects litigation "on behalf of minority groups intentionally short changed in the institution's composition of its generic minority 'critical mass.'" *Id*.

[24] Nancy Fraser & Linda Gordon, *A Genealogy of 'Dependency': Tracing a Keyword of the U.S. Welfare State*, 19 SIGNS 309, 310 (1994) (citations omitted).

[25] *See infra* Part III.B.

and transformation of the educational experience. I explain how each of these purposes relates, or is thought to relate, to the notion of critical mass.

Part IV, which forms the heart of this Article, then asks even if we agree on the public good to be produced, do we know what the threshold human resource is that would allow us to achieve or produce it? Put simply, what precisely does critical mass mean in the context of affirmative action involving college admissions decisions? After exploring the various ways in which the notion of critical mass has been used and understood (as perfect analogy to the term's scientific origin, as a metaphor, etc.) the Article concludes that the best way to understand the idea of critical mass would be in terms of what I have called an imperfect analogy. The physics of society cannot be entirely free from the burden of individual psychology. Humans are not neutrons, although they do often influence one another's action in a similar way that neutrons do in the process leading to an explosion. Thus, although critical mass in relation to the physics of society can only function as an analogy to the use of the term in the physical world, that analogy cannot in the very nature of things be perfect. Critical mass in the social, legal, and political world can only work as an imperfect or soft analogy. Part IV explores in some detail how precisely imperfect or soft analogy works. Empirical evidence shows that in many social and political activities criticality is reached between fifteen and thirty percent.[26] I argue that in relation to admission of minorities to educational institutions and the presence of women in legislative bodies, the range may not only be related to the nature and character of the actors and the institutions of interaction, but also to the nature of the transformation that is desired. Thus, for example, in relation to minorities in higher education institutions, the lower part of the threshold may be sufficient to encourage them to participate in the educational process, to speak out on issues that matter to them and the groups to which they belong. I refer to this as *voice threshold*. The comfort level to speak in one's own distinct voice may require a higher percentage of minority students. This is what I have called *perspective threshold*. The critical mass for the transformation of the culture of the institution would be at the higher end of the range. I refer to this as *culture threshold*. Imperfect analogy suggests that unlike in the scientific world, change in relation to the physics of society may occur at different levels.

Part V raises and resolves what I call the paradox of collective action inherent in the notion of critical mass. The notion of critical mass is invoked to pursue two seemingly contradictory purposes:

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[26] *See infra* note 173 and accompanying text.

assuming collective (group) action while projecting the liberation of the individual through (or as a consequence of) such action.

As I have already explained, Parts II and V of the Article explore the notion of critical mass in relation to the success or failure of social activities. They show how the behavior of actors often depends on their expectation that others would act in the given circumstance. A social activity is tipped-out if enough actors sign-off the activity and it is tipped-in if enough actors sign-on. In Part VI, I explore briefly a related issue, whether what is true for social activities is also true for social norms. That is, is the notion of critical mass relevant to the shifting of social norms as it is to the tipping-in or tipping-out of social activities? I conclude it is. Part VII glances backwards and makes some concluding remarks.

## I. CRITICAL MASS: HISTORY OF A CONCEPT

The notion of critical mass originated in relation to nuclear fission. It referred to the amount of fissionable plutonium or uranium that was needed to start and sustain nuclear fission which will in turn lead to nuclear or atomic explosion.[27] Critical mass is achieved when the size of the uranium is such that a "typical neutron emitted near the center of the sphere will likely collide with a uranium nucleus before reaching the outer surface."[28] If the size of the uranium is small "each neutron traverses a small volume containing other atoms and, since most of the volume is 'empty space' from a neutron's point of view, there is only a small amount of induced additional activity."[29] Critical mass is achieved when "as many neutrons are created as escape."[30] The point of criticality is not strictly just a matter of the mass, but also of the density and shape of the uranium.[31]

In its scientific dimension, the notion of critical mass, therefore, refers to four ideas. First, it refers to the existence of a point of

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[27] *See supra* note 12.

[28] Lightman, *supra* note 13.

[29] *See* SCHELLING, MICROMOTIVES, *supra* note 3, at 94; *see also* Lightman, *supra* note 13 ("[I]f a solid sphere of uranium atoms is too small, a neutron released in the middle of the sphere will reach the outer surface before it collides with a uranium nucleus and thus harmlessly escape without causing a fission. Without a fission, no chain reaction can get going.").

[30] Alan Lightman, *Critical Mass Explained*, N.Y. REV. BOOKS, Nov. 7, 2002, *available at* http://www.nybooks.com/articles/15809 (citing a letter from physicist Jeremy Bernstein).

[31] "If you increase the density, the critical mass becomes dramatically smaller. If, for example, you increase the density by a factor of two, the critical mass is decreased by a factor of four." *Id.*; *see also* SCHELLING, MICROMOTIVES, *supra* note 3, at 95 ("[E]ven with the atomic bomb, 'mass' is not strictly correct. The density, purity, and shape of the uranium, as well as its mass, together with any reflective coating, will determine whether or not the lump 'goes critical.'").

criticality which will be reached when the necessary amount of material or resource is used. Second, the point of criticality is actually not just a matter of the amount of resource, but also of the density and purity of that resource. It is not just the level, but the quality of the resource that will lead to the point of criticality. Third, reaching that point of criticality leads to a self-sustaining transformative event (explosion in the scientific sense). Fourth, the transformative event is a result of the interaction of constituent elements of the resource. It is the collision of the neutrons that leads to the transformative event. In this sense, one could think of self-sustaining fission and explosion as a group-based event, as a kind of "collective action."

Even though there is some controversy as to the exact date when the term was first used, it was apparently 1919 when it was invoked for the first time.[32] From that scientific beginning the term has had a wide and varied "career."[33] It has been used in various social and political settings to refer to the minimum level of resource or the minimum number of people that are required to achieve whatever goals were set—shifting of norms, emergence or death of social movements, production of public goods, etc. Indeed, as Gerald Marwell and Pamela Oliver note, the idea of critical mass has become "central to many understandings of collective action."[34] The notion of critical mass assumes that there is a consensus on the objectives that are to be achieved or the public goods that are to be produced for which there is the need for this or that minimum level of resource or for this or that kind of interaction or collective action. Without such consensus the idea of critical mass will make no sense, for the question would arise "critical mass for what?"

Critical mass is, of course, not the only (or first) concept with a

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[32] Guenther Eichhorn & Michael J. Kurtz, *A Reader Answers: 'Critical Mass' Origin*, PHYSICS TODAY, May 2004, at 18 ("[A reader] asked about the origin of the term 'critical mass.' A search of the full text database of the NASA Astrophysics Data System shows that 'critical mass' was first mentioned in 1919, in volume 31 of the *Publications of the Astronomical Society of the Pacific*, page 121. An article by Hugo Beinioff attributes the term to Arthur Eddington, who 'singled out a critical mass—one at which a vital change condition takes place.'") (citations omitted). William Safire in a *New York Times Magazine* article, however, attributes the coining of the term "critical mass" to British science historian, Margaret Gowing in 1940. *See* William Safire, *On Language*, N.Y. TIMES, July 27, 2003, at 15. Apart from the fact that there is evidence of the use of the term prior to 1940, Safire's view has also been challenged on the ground that Margaret Gowing, who was an undergraduate student at the time studying economic history could not have coined the term. *See* Cameron Reed, *A Reader Inquires: Origin of 'Critical Mass,'* PHYSICS TODAY, Jan. 2004, at 14.

[33] *See* Schelling, *Hockey Helmets*, *supra* note 11, at 89.

[34] GERALD MARWELL & PAMELA OLIVER, THE CRITICAL MASS IN COLLECTIVE ACTION: A MICRO-SOCIAL THEORY 1 (1993) ("The idea of *critical mass* is central to many understandings of collective action. Social movement activists, community leaders, and fund-raisers use the term when they talk about getting together enough resources to accomplish some goal."). The authors define "collective actions" as "actions taken by two or more people in pursuit of the same collective good." *Id.* at 4.

scientific origin that has been appropriated so as to explain a social, political or legal phenomenon.[35] One other example is the notion of *phase transitions*, "[t]ransformations between solid, liquid, and gas."[36] The notion of phase transitions, initially employed to understand "the missing link between the kinetic theory of gasses and a molecular-scale understanding of the other forms of matter," is now regularly used as a "central concept[] underlying the physics of society,"[37] often used as a way to understand and explain processes of sudden social change. Malcolm Gladwell's concept of "tipping point"[38] in trends and norms, Charles Jencks' postmodernist architecture of "broken symmetry"[39] and Bak and his colleagues' notion of a "power law"[40] may be examples of phase transitions.

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[35] As I noted earlier, the application of physical methods to social issues has been with us since Thomas Hobbes' attempt to use scientific methods to explore and explain politics. And to some extent, the reverse has also been true. Statistical physics did not spawn social physics; it was apparently the other way around. In the 1870s, when James Clerk Maxwell was developing the kinetic theory of gasses, he knew that it was going to be very difficult, perhaps impossible, to track the motion of countless particles ricocheting in a hot gas. But he drew hope from the works of an earlier generation of social statisticians who had shown that even a large number of people whose individual members are as capricious as gas molecules could show precise regularities. After reading Henry Thomas Buckle's *History of Civilization in England*, which demonstrated the sorts of social statistics that I just noted, Maxwell wrote: "Those uniformities which we observe in our experiment with quantities of matter containing millions of molecules are uniformities of the same kind as those explained by Laplace and wondered at by Buckle arising from the slumping together of multitudes of causes each of which is by no means uniform with the others." *See* BALL, *supra* note 14, at 68. Put simply, historically, physical science has often informed social science as social science has at times inspired physical science. Ball refers to the "days when physical science and social science were the twin siblings of a mechanistic philosophy and when it was not the least disreputable to invoke the habits of people to explain the habits of insensate particles." *Id*. at 69.

[36] BALL, *supra* note 14, at 81.

[37] *Id.*

[38] GLADWELL, *supra* note 21. Malcolm Gladwell's thesis is that big changes in ideas, products and behavior are consequences of changes that happen at the margin. He argues that the big fall in crime rate that one saw in New York City in the 1990s and the phenomenon of white flight from American cities to avoid integrated neighborhoods and schools resulted "from changes that happened at the margin." *Id*. at 8. Just like critical mass itself, the notion of tipping point has also entered popular usage. *See, e.g.*, Michael Oreskes, *The Nation: Moment of Truth; What's the Presidential Tipping Point?,* N.Y. TIMES, July 25, 2004, § 4, at 1. In fact some consider tipping point to be synonymous with critical mass. *See* Richard Harrington, *True to Their Roots*, WASH. POST, July 30, 2004, at T08 ("[Malcolm] Gladwell's thesis is that ideas, products and behaviors can spread like viruses and that the consequences of such social epidemics can ripple outward until a critical mass—the tipping point—is reached.").

[39] *See* CHARLES JENCKS, THE ARCHITECTURE OF THE JUMPING UNIVERSE (1995).

[40] *See* P. Bak et al., *Self-Organized Criticality in the "Game of Life*,*"* 342 NATURE 780 (1989). Bak and his co-authors found that the building of a sand mountain on a table by dropping grains of sand one by one reaches a point (the slope reaches a certain steepness) when an avalanche commences. The power law is the mathematical model that expresses the probability of an avalanche. The notion of power law has been applied in the area of voting where a certain threshold of voters voting one way influences the way their neighbors vote. See BALL, *supra* note 14, at 300 (citing Americo Tristão Ber et al., *Election Results and the Sznajd Model on Barabasi Network*, 25 EUR. PHYSICAL J. B 123 (2002)).

Just like the notion of critical mass, the idea of phase transitions began as a means of understanding physical phenomena but is now employed to understand and describe abrupt shifts in modes of social behavior or thought and the critical point, the threshold, at which such changes occur. In fact, the notion of "tipping point" is now often thought of and used as a special version of critical mass.[41] There is tipping "when the success of a social activity depends on the formation of a critical mass, and enough actors sign on or sign off that the activity succeeds or fails. If enough actors sign on, the activity is tipped in. If enough actors sign off, the activity is tipped out."[42]

To summarize, in whatever field of social endeavor the notion of critical mass is invoked, there are certain common elements that define it. First, critical mass is used to understand the processes of relatively sudden social changes and the point of criticality that will bring about those changes. Second, the notion of criticality or threshold is based on the assumption that decisions of individuals or other entities are influenced by the choices that others make or are expected to make.[43] So, critical mass is both about the threshold that triggers a transformation as well as about the nature of collective action or the production of a public good.

## II. CRITICAL MASS IN LEGAL DISCOURSE: AN OVERVIEW

The invocation of critical mass in *Grutter v. Bollinger* was not the first time that the phrase was used in the United States in the legal arena or even in relation to affirmative action. In 1980, for example, a district judge cited a "well respected authority on matters concerning school desegregation" as giving "uncontradicted testimony . . . that unitary status cannot be achieved [for hiring and retrenchment] until a 'critical

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41 *See* SCHELLING, MICROMOTIVES, *supra* note 3, at 101 ("The tipping model is a special case—a broad class of special cases—of critical-mass phenomena.").

42 *See* Eisenberg, *Corporate Law and Social Norms*, *supra* note 9. An example of a tipping point that is often cited is the process of racial segregation or desegregation of neighborhoods in the United States. *See* SCHELLING, MICROMOTIVES, *supra* note 3. Black residents are likely to move into a predominantly white neighborhood if there already is a certain percentage of blacks in the neighborhood (tipping-in) while whites are likely to move out if the number of black residents exceeds a certain point (tipping-out).

43 Eisenberg, *Corporate Law and Social Norms*, *supra* note 9, at 1263 ("The behavior of actors often depends on their expectations of what other actors will do.") (citing SCHELLING, MICROMOTIVES, *supra* note 3, at 91-102). Schelling gives numerous examples of how the behavior or expected behavior of others influences people's actions. Referring to residential segregations and integrations Schelling observes: "For tipping-in as well as for tipping-out, part of the process may involve expectations—people do not wait until the alien colony exceeds their toleration before departing, nor do minority entrants wait until comfortable numbers have been achieved, as long as they can foresee the numbers increasing with any confidence." SCHELLING, MICROMOTIVES, *supra* note 3, at 101.

mass' of Black teachers and administrators has been hired."[44] The case, *Oliver v. Kalamazoo Board of Education*, involved a school district in Kalamazoo that was under a desegregation order.[45] But the school was also experiencing financial problems which required it to lay off over a hundred teachers. The question before the court was whether the Board of Education could rely, without being in violation of the desegregation effort which was adopted as a remedy for a constitutional violation, on a collective agreement with teachers that provided for the dismissal of the most recently hired teachers in the event that there was the need to lay off some teachers. The consequence of using such a procedure would have been that the percentage of black teachers would be reduced significantly since a substantial number of them were hired more recently than their white counterparts.[46]

The district court held that the procedure was illegal to the extent that it undermined the process of remedying past constitutional violations by the District.[47] But for our purpose here what is important is what the district court said as to when it would be possible to use a unitary procedure of dismissal (when it would be permissible for the District to use something like the seniority rule). District Court Judge Fox observed that the Kalamazoo Board could not use a unitary procedure until there was a *critical mass* of black teachers to remedy the constitutional injury that the Board and the District had inflicted on black children. And what constitutes a critical mass in this context? Judge Fox avoided the difficult question by simply defining critical mass with reference to the target number of black teachers that the District itself had set as being necessary to remedy its past illegal discrimination.[48] The question of critical mass was settled by definitional fiat. It is interesting to note that though Judge Fox was happy to avoid grappling with the issue of what constitutes critical mass by simply holding the District to its earlier assertion as to what would

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[44] *See* Oliver v. Kalamazoo Bd. of Educ., 498 F. Supp. 732, 747-48 (W.D. Mich. 1980) ("[A] well-respected authority on matters concerning school desegregation and co-author of the court-ordered study of the Kalamazoo School District . . . [gave] uncontradicted testimony . . . that in a district like Kalamazoo . . . unitary status cannot be achieved until a 'critical mass' of Black teachers and administrators has been hired. In determining what number, or percentage, of Black teachers will form a critical mass for Kalamazoo, [the expert suggested that the] major consideration was to achieve a number which would insure that Black students had enough role models . . . . [The expert stated that in] a multi-racial student body, the need for role models is important because they can encourage minority students to higher aspirations and at the same time work to dispel myths and stereotypes about their race."); *see also* Addis, *Role Models*, *supra* note 16.

[45] *Kalamazoo*, 498 F. Supp at 732.

[46] *Id*. at 742.

[47] *Id*. at 751.

[48] *Id.* at 747 ("[T]he Kalamazoo Board of Education, itself, determined that a 20% Black staff was necessary in order to remedy the injuries which its actions had inflicted on the students of the District.").

remedy past discrimination,[49] the Judge also indicated that the notion of critical mass in this instance may be tied to the idea of role models.[50] The district court appears to have thought of critical mass in this particular context as partly tied to the rough ratio of black teachers to black students, whose purpose was one of achieving "a number which would insure that Black students had enough role models."[51]

Just prior to the Supreme Court's decision in *Grutter v. Bollinger*, the concept of critical mass was also invoked in a case before the District Court for the District of Massachusetts. The case, *Comfort v. Lynn School Committee*,[52] involved a public school plan in Massachusetts which took race into account when permitting children to transfer from their neighborhood school to other schools within the school district. The plaintiffs challenged the plan as being inconsistent with the Equal Protection Clause of the United States Constitution.[53] The district court entered a judgment in favor of the defendants and dismissed the claims of the plaintiff parents. The court partly relied on the notion of critical mass to conclude that the district plan was constitutional. "There is a point," wrote Judge Nancy Gertner, "at which the presence of a racial minority becomes substantial enough to catalyze intergroup relations, a 'tipping point' or 'critical mass.' Defendants' experts were unanimous on this issue."[54] Judge Gertner's observation makes three important points about the notion of critical mass. First, critical mass is about finding a threshold or a point of criticality ("substantial enough") to achieve the desired goal or public good. Second, the presence of that threshold leads to relatively sudden social change ("catalyze intergroup relations"). Third, the judge's comment necessarily implies that critical mass is about collective action, or more precisely a process where the behavior or actions of people are influenced by the behavior or expected behavior of others.

In *United States v. Virginia*, the Supreme Court itself also referred to the notion of critical mass to note that, during trial before the district court, evidence was presented to indicate that a ten percent female enrollment in the then all male military academy would be "'a sufficient critical mass' to provide the female cadets with a positive educational experience."[55] For the moment, let us not worry about whether the

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49 To be sure, the court flirted with the idea that critical mass could partly be a function of the ratio between black teachers and black students. *Id*. at 748.

50 Oliver v. Kalamazoo Bd. of Educ., 498 F. Supp. 732, 745-47 (W.D. Mich. 1980). I shall explore in detail later how the idea of critical mass relates to the notion of role models.

51 *Id*. at 747.

52 Comfort v. Lynn Sch. Comm., 263 F. Supp. 2d 209 (D. Mass. 2003).

53 *Id.*

54 *Id.* at 260-61 (citation omitted).

55 United States v. Virginia, 518 U.S. 515, 523 (1996) (citing evidence before the district court in U.S. v. Commonwealth of Virginia, 766 F. Supp. 1407, 1437 (1991)).

notion of critical mass for the physics of society assumes a precise number or a percentage and if so, what that number or percentage would be. It is sufficient to note here that the notion of critical mass had actually been invoked by the Supreme Court prior to its decision in *Grutter*.

However, it was in *Grutter* that the idea of critical mass assumed a more prominent role. *Grutter* involved a challenge by a white student to the affirmative action policy of the School of Law at the University of Michigan. The challenger argued that her equal protection right was violated when the Law School admitted students from certain minority groups whose grade point average (GPA) and law school admissions test (LSAT) numbers were lower than hers.[56] A divided Supreme Court rejected the challenge and upheld the policy of the Law School. In the process, the Court had occasion to reflect on an aspect of the justification that the Law School had advanced for its affirmative action policy: the need to admit a *critical mass* of students from historically underrepresented groups.[57]

The phrase 'critical mass' was apparently used in the Law School's 1992 admissions policy about which both the Dean of the Law School and the Director of its admissions office "testified before the district court"[58] and which "was the subject of many hours of testimony during trial as well as extensive discovery."[59] The two school officials testified that they understood critical mass to mean "meaningful numbers" or "meaningful representation."[60] Neither was, however, willing to attach a specific number, or even a "range of numbers or percentages,"[61] to this "meaningful representation."[62] The testimonies of the two school officials indicate the tensions in their understanding and appropriation

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[56] Grutter v. Bollinger, 539 U.S. 306 (2003). Pursuant to an admissions policy that was drafted with an earlier Supreme Court decision (Regents of the Univ. of Cal. v. Bakke, 438 U.S. 265 (1978)) in mind, the University of Michigan Law School considered race as one factor among many factors to determine who should be admitted to the Law School. The policy states that the Law School "seek[s] a mix of students with varying backgrounds and experiences who will respect and learn from each other." Grutter v. Bollinger, 288 F.3d 732, 736 (6th Cir. 2000).

[57] In the Court's companion case—*Gratz v. Bollinger*—the phrase critical mass was mentioned only once and in passing. *See* Gratz v. Bollinger, 539 U.S. 244, 281 (2003) (Thomas, J., concurring) ("Under today's decisions, a university may not racially discriminate between the groups constituting the critical mass.").

[58] Grutter v. Bollinger, 137 F. Supp. 2d 821, 832 (E.D. Mich. 2001) ("Erica Munzel . . . the director of the law school's admissions office . . . testified that she feels bound by the law school's 1992 admissions policy, including the provision that calls for the enrollment of a 'critical mass of minority students.'"). For the testimony of the Dean, see *id*. at 833-34.

[59] *Id.* at 825.

[60] *Id.* at 834 and 832 respectively.

[61] *Id.* at 833.

[62] *Cf.* Comfort v. Lynn Sch. Comm., 263 F. Supp. 2d 209, 237 (D. Mass. 2003) ("There is no 'magical number,' in [the experience of the expert witness, a social psychologist] that indicates a critical mass, but she cited studies describing a 20% figure below which members of a racial minority in a given setting feel isolated or stigmatized.").

of the concept. On the one hand, it is clear that each understood and wished to use critical mass as an analogy to the way that the concept is used in its scientific and original (or literal) sense: the word "numbers" is equivalent to "mass" and "meaningful" to the idea of "critical." To refer to critical mass as "meaningful numbers" is to therefore attempt to draw an analogy to the appropriation of the concept in the scientific realm.

On the other hand, the two officials were reluctant to draw the full analogy when they declined to attach a range of numbers or percentages to the notion of "meaningful representation" or "meaningful numbers." Indeed, at times the officials seem to use the concept not so much as an analogy but as a metaphor. Thus, Dean Jeffery Lehman is quoted as having observed that "critical mass is not a numerical quota. It's an idea, just like the word 'tall' is an idea, not a specified height."[63] Critical mass in this sense seems closer to being a metaphor than an analogy. The testimonies of the two law school officials indicated that there was uncertainty (ambivalence) as to whether the phrase was to be used as an analogy or as a metaphor.

It appears that this uncertainty was informed by the unattractive jurisprudential conclusion that each choice was viewed to have presented. If full analogy is to be employed and a specific number, or even range of numbers or percentages, is used as representing "meaningful numbers," then that may imply that one's destination is what Justice Scalia during the oral argument called "quota land."[64] And, of course, in the United States quotas are constitutionally impermissible.[65] On the other hand, if the phrase is to be used as a metaphor it might be thought too abstract and too general to justify any specific decision. While analogies might lock one into unconstitutional specificity (quota), metaphors may lead to an unconstitutional generality (vagueness and unconstrained discretion).

While the majority opinion endorsed the Law School's position on critical mass in all of its uncertainties, the dissenters in their various ways sought to press the argument that the phrase is used as a disguised analogy whose purpose was to embrace a quota system. Chief Justice

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[63] *See* Christopher Miller, *The Controversy in Achieving Critical Mass*, MEDILL NEWS SERVICE, March 2003, *available at* http://docket.medill.northwestern.edu/archives/000103.php.

[64] *See* Transcript of Oral Argument at 40, Grutter v. Bollinger, 539 U.S. 306 (2003) (No. 02-241), *available at* http://www.supremecourtus.gov/oral_arguments/argument_transcripts/02-241.pdf.

[65] Indeed, it is not just in the legal realm that quotas are disfavored; even in the political realm the issue of quotas seems scarcely open to debate. One would only need to cite the death of Lani Guinier's nomination for Assistant Attorney General during the Clinton administration on the account that she had advocated group representation in some of her writings. The fact that her writings were distorted mattered not. It was enough that the accusation was made. In other parts of the world, quotas have been successfully used to increase significantly women's representation in legislative bodies. *See infra* note 173.

Rehnquist expressed that position most directly. "Stripped of its 'critical mass' veil," he wrote, "the Law School's program is revealed as a naked effort to achieve racial balancing."[66] Justice Kennedy referred to the concept of critical mass as "a delusion used by the Law School to mask its attempt to make race an automatic factor in most instances and to achieve numerical goals indistinguishable from quotas."[67]

To summarize, the notion of critical mass has increasingly become an important concept in legal discourse, especially in relation to admissions to colleges and universities. As the opinions of both the majority and the dissent in *Grutter* show, there is, however, no agreement as to what the concept precisely means. Sometimes it appears to be used as an analogy. Other times, the phrase seems to be employed as a metaphor. Each move, as I shall show later, has its problems both conceptually and constitutionally. In whatever way the notion is understood, there is no doubt that it has become part of the conversation and will likely remain so for the foreseeable future, as Justice Scalia in his dissent in *Grutter* suggested.[68]

Outside the legal realm, mainly in the political domain, the notion of critical mass has been appropriated as a means of understanding the impact of what noted political theorists such as Iris Young and Anne Phillips have called the "politics of presence."[69] Studies in the political domain appropriating the concept have mainly focused on the presence of women in legislative bodies,[70] and whether and how a threshold or critical mass of women in legislative bodies affects the political agenda, public policy, and political culture in those bodies specifically and in society as a whole.

Although the examples that I shall pursue in relation to critical mass are mostly limited to affirmative action in higher education institutions and the response of courts to that policy, there are common threads among all uses of critical mass in the political and legal domains. First, they all assume the existence of a certain threshold that is critical for the tipping-in of a certain activity or culture. Second, to a

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[66] Grutter v. Bollinger, 539 U.S. 306, 379 (2003). The Chief Justice also referred to the phrase as a "sham." *Id*. at 383. Justice Scalia observed that the critical mass justification was "mystical "and "a sham to cover a scheme of racially proportionate admissions." *Id*. at 346-47.

[67] *Id.* at 389.

[68] *See supra* note 23.

[69] *See* IRIS YOUNG, INCLUSION AND DEMOCRACY (2002); ANNE PHILIPS, THE POLITICS OF PRESENCE (1995).

[70] *See, e.g*., D. Dahlerup, *From a Small to Large Minority: Women in Scandinavian Politics*, 11 SCANDINAVIAN POL. STUD. 275 (1988); M.A. St. Germain, *Does Their Difference Make a Difference? The Impact of Women on Public Policy in the Arizona Legislature*, 70 SOC. SCI. Q. 950 (1989); Sue Thomas, *The Impact of Women on State Legislative Policies*, 53 J. POL. 958 (1991); SUE THOMAS, HOW WOMEN LEGISLATE (1994); WOMEN AND ELECTIVE OFFICE (S. Thomas & S. Welch eds., 1998); Grey, *supra* note 2.

greater or lesser extent, they are about understanding the nature and impact of collective action. To talk about the importance or impact of women in legislative bodies is to assume that the presence of women in some numbers will have an impact either on the nature of the issues raised or the perspectives that are brought to bear on issues before such bodies. To advocate the admission of a certain threshold of minority students to higher education institutions is to assume that the presence of those students would lead to the raising of issues that would otherwise not be raised. Even in relation to issues that might have been raised absent those students, the presence of those students might lead to those issues being looked at from different perspectives.

Third, paradoxically, one of the reasons why the presence of a critical mass of members of this or that group in this or that venue is viewed as essential is because it is thought that that condition would ultimately allow the members of those groups to speak as individuals rather than as representatives of the groups to which they are said to belong. Indeed, this is what the University of Michigan argued before the federal courts in *Grutter* and what Justice O'Connor embraced in her majority opinion. This is what I call the paradox of collective action and one that I shall explore in Part V.

Fourth, in both the political and legal domains, the question is raised as to whether the notion of critical mass is susceptible to specific numbers or percentages or whether it is simply used as a metaphor.

Let me flag a point that is likely to be raised by those who may see a difference in the notion of critical mass when applied to legislative bodies as opposed to when the concept is used to understand how the process may work in other areas such as educational institutions, work places and other cultural and social spaces. The difference may be thought to lie in the fact that in a legislative body, women or minorities have the power of votes, unlike minorities in an educational institution or women employees in the private sector. To the extent that men or the majority ethnic or racial groups are restrained from engaging in a culture of devaluation and exclusion in the legislative domain, the relevant critical mass is likely to be whether or not those groups will need the votes of a racial minority or women to enact pieces of legislation that are important to them. Under this account, what is at work in the legislative body, as opposed to other cultural and social spaces, is not a general cultural shift as a result of the mere presence of a certain percentage of the relevant out-groups, but rather a temporary calculation of what it would take to ensure that one has the support of these groups when one needs them.

The distinction between legislative bodies and other arenas for the purpose of understanding the notion of critical mass seems to make logical sense. However, empirical evidence seems to suggest that there

isn't any difference in the way that critical mass works in legislative bodies as opposed to other social and cultural spaces. The politics of presence seems to have its effect in a particular range of percentages and the political dynamics of vote trading do not seem to specify what that range of percentages might be. Now, this is not to say that the process of vote trading may not affect how majorities view minorities, but it appears from the literature that the cultural shift that results from a critical mass of the relevant out-group is not dependent on mere calculation of votes.[71] However, even if it were to be the case that legislative bodies are indeed different and thus the percentages from that domain are inapplicable to the affirmative action area that still would not affect the argument of this article. In other social and cultural fields where the dynamics of vote trading are not factors (e.g., the percentage of women that would incline employees, both men and women, to have a positive attitude towards women managers in a particular enterprise), criticality seems to be reached when the percentage of the relevant out-groups reaches a particular range.

## III. What is Critical Mass For? The Issue of Purpose or Social Transformation

To put it in the traditional formulation of equal protection analysis, there were two distinct, albeit related, questions that the *Grutter* Court had to resolve about affirmative action. The first was the nature of the purpose which required a "meaningful number" (critical mass) of minority students from historically underrepresented groups for its realization. Or, to use the analogy from the scientific realm, the question is: "What is the social equivalent of the nuclear fission or explosion for which a critical mass is required?" The issue here is the nature of the public good to be produced through the admission of a critical mass of minority students and whether that public good is constitutionally cognizable. The second question has to do with the nature of critical mass itself. What precisely is a critical mass in this context and is it a constitutionally permissible way of achieving whatever purpose or public good is determined to be constitutional? The first question is thus about the public good to be produced or achieved while the second concerns the threshold resources needed to achieve or produce it. I shall explore the second issue in more detail later, but in this section I wish to explore the first issue, for in some sense the question "what is critical mass?" is tied to another question, "what is critical mass for?"

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[71] *See generally* Dahlerup, *supra* note 70; St. Germain, *supra* note 70.

One can think of a number of possible purposes for which the admission of a critical mass of students from historically underrepresented groups may be necessary. Some of the purposes were outlined in the various opinions in *Grutter* while others may have their origin either in other decisions of the Supreme Court or decisions of other federal courts. Still others have been advanced by scholars even though the courts have not adopted or appropriated them.

### A. *Critical Mass and Remedying Past Discrimination: Corrective Justice as an Aspect of the Public Good*

One thing seems to be clear: the notion of critical mass contained in the University of Michigan Law School admissions policy and repeated in the School's brief before the court was not meant to be about remedying past discrimination. Justice O'Connor noted in her majority opinion that Professor Richard Lempert, the individual who chaired the faculty committee that drafted the 1992 admissions policy, "explained that [the language of the policy] did not purport to remedy past discrimination."[72] So, one could not view the admission of a critical mass (however the "mass" part is understood) as a step in the process of remedying past injustices against blacks or other minority groups. In any case, it would seem rather odd to think of critical mass as a process of remedying past discrimination.

One could, of course, make a rather complicated argument attempting to link the admissions policy to a version of collective action remedying past discrimination. For example, it could be argued that the admission of a certain number of minority students, say blacks, to elite institutions such as the University of Michigan is tied to remedying past discrimination in the following way: A sufficient number of minority students (a threshold of participants) will make it more likely that the terrible social and economic conditions under which many minorities, such as blacks, live, which are themselves consequences of past discrimination, will be transformed. They will be transformed by a critical mass of minority students in one of two ways. First, a critical mass of minority students will exert influence on their fellow (nonminority) students about the social and economic conditions of minorities drawn from their life experiences. When graduates of those

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[72] Grutter v. Bollinger, 539 U.S. 306, 319 (2003). Lee Bollinger, who was then the president of the University of Michigan, "reportedly believed that *Brown* [*v. Board of Education*] needed to be the starting point for the public debate and questioned whether Bakke's diversity rationale was a 'powerful enough' argument." Tomiko Brown-Nagin, *Elites, Social Movements, and the Law: The Case of Affirmative Action*, 105 COLUM. L. REV. 1436, 1453 n.69 (2005).

schools assume leadership positions, as they invariably will,[73] they would be inclined to work to transform those social and economic conditions that link us to our discriminatory past. Second, graduating a certain number of minority students from elite schools will itself lead to the placement of minority graduates in various places of leadership such that they will form a critical mass that will push for the transformation of the legacy of our discriminatory past, or at least make those conditions issues of concern and serious conversation. Critical mass in the context of remedying past discrimination has two senses: a requisite number to influence actors; or, a critical number that will inspire transformative action.[74] Under this reading, remedying past discrimination could be viewed in the way that Amy Gutmann and Dennis Thompson saw it, as a part of preparing the condition for fair competition.[75] In some ways those who defend affirmative action on integrationist grounds also view it as a form of remedying past discrimination, but one which looks forward rather than backward. Integration is viewed as a way of preparing the condition for fair competition among citizens.[76]

But the link between critical mass and remedying past discrimination may not be strong. First, of course, is the fact that in the particular case of the University of Michigan School of Law neither school officials nor the Supreme Court viewed the notion of critical mass in terms of remedying past discrimination. There was no attempt

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[73] "[U]niversities, and in particular, law schools, represent the training ground for a large number of our Nation's leaders . . . . Individuals with law degrees occupy roughly half the state governorships, more than half the seats in the United States Senate, and more than a third of the seats in the United States House of Representatives." *Grutter*, 539 U.S. at 332 (O'Connor, J., writing for the majority).

[74] During the oral argument on *Grutter*, Justice Breyer made a similar argument in a question that he put to the lawyer representing Barbara Grutter. Justice Breyer wanted the lawyer to respond to what he thought would be the argument from the side that supported the Michigan plan. After observing that 75 percent of black students attend "schools that are more than 50 percent minority [and] 85 percent of those schools are in areas of poverty," Justice Breyer then asked the lawyer why it was then not reasonable to argue, as supporters of the program would, that "the only way to break this cycle is to have a leadership that is diverse. And to have a leadership . . . that is diverse, you have to train a diverse student body for law, for the military, for business, for all the other positions in this country that will allow us to have a diverse leadership in a country that is diverse." *See* Transcript of Oral Argument at 40, Grutter v. Bollinger, 539 U.S. 306 (2003) (No. 02-241), *available at* http://www.supremecourtus.gov/ oral_arguments/ argument_transcripts/02-241.pdf.

[75] "There are two different ways in which public policy might remedy the effects of past discrimination, each of which corresponds to a different justification . . . . The first is an argument from *fair competition*. Public policy takes into account the effects of past discrimination in order to try make [sic] the present competition fair . . . . The second argument sees preferential [admission] as repaying a historical debt. It looks to past discrimination for the purpose of compensating for injustice that has already occurred." AMY GUTMANN & DENNIS THOMPSON, DEMOCRACY AND DISAGREEMENT 331 (1996).

[76] *See* Elizabeth Anderson, *Integration, Affirmative Action, and Strict Scrutiny*, 77 N.Y.U. L. REV. 1195 (1995).

on the side of those defending the Law School's affirmative action plan to connect the notion of critical mass to the idea of remedying past discrimination. Second, the notion of past discrimination that does not even view the specific members that are to form the critical mass as themselves being victims of past discrimination (which does not seem to have been the case in the Michigan controversy) will face jurisprudential hurdles. The notion of past discrimination as outlined above will be viewed as a consequence of general societal discrimination that the courts have refused to treat as a cognizable claim.[77]

And even if one were to accept remedying past discrimination as being the scientific equivalent of an explosion, it will be difficult to maintain that the number of minority students that the University of Michigan School of Law accepts each year is the critical minimum number to ensure that such "explosion" takes place.

### B. *Critical Mass and Racial Aesthetics: Perceptual Comfort or Sociological Legitimacy*

For Justice Clarence Thomas the purpose for which the notion of critical mass was invoked in *Grutter* had very little to do with remedying past discrimination or the enrichment and transformation of the educational experience of all of the Law School's students, as the Law School administration had claimed. Rather, for Justice Thomas, the Law School's desire and attempt to admit a certain number of minority students was simply about "racial aesthetic"[78] or "classroom aesthetic."[79] In a footnote, Justice Thomas explains why he employs the term racial aesthetic.[80] He observes: "I refer to the Law School's interest as an 'aesthetic' [because] the Law School wants to have a

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77 *See* Wygant v. Jackson Bd. of Educ., 476 U.S. 267, 276 (1986) ("Societal discrimination, without more, is too amorphous a basis for imposing a racially classified remedy" because, as the plurality observed, a "court could uphold remedies that are ageless in their reach into the past, and timeless in their ability to affect the future."); *see also* Richmond v. J.A. Croson Co., 488 U.S. 469, 496-98 (1989); Regents of the Univ. of Cal. v. Bakke, 438 U.S. 265, 307 (1978) (Justice Powell rejecting remedying societal discrimination as "amorphous."); Grutter v. Bollinger, 539 U.S. 306, 353 (2003) (Thomas, J., dissenting) ("[T]he Court has rejected an interest in remedying general societal discrimination as a justification for race discrimination.").

78 "A distinction between these two ideas (unique educational benefits based on racial aesthetic and race for its own sake) is purely sophistic—so much so the majority uses them interchangeably." *Grutter*, 539 U.S. at 355 (Thomas, J., dissenting). ee also his observation that the Michigan Law School's argument "as facile as it is, can only be understood in one way: Classroom aesthetics yields educational benefits." *Id.*

79 "[T]he Law School should be forced to choose between its classroom aesthetic and its exclusionary admissions system—it cannot have it both ways." *Id.* at 361 (Thomas, J., dissenting).

80 *Id.* at 354 n.3 (Thomas, J., dissenting).

certain appearance, from the shape of the desks and tables in its classrooms to the color of the students sitting at them."[81] According to this account, critical mass would represent simply the minimum number, the threshold, that would make university or law school officials feel good about the way the composition of the student body looks (even though there is marginal educational benefit).[82]

How, according to Justice Thomas, would the notion of critical mass serve its purpose of racial aesthetics? After all, even decorations have to follow certain logic to have the desired pleasing effect. For perceptual transformation to take place a certain threshold has to be met. Here is where the notion of proportionality that both Justice Thomas and Chief Justice Rehnquist emphasize in their dissents comes in. For Thomas, as well as Rehnquist, it was clear that the policy that was advanced through the concept of critical mass was about balancing the races. As Rehnquist wrote in his dissent, "Stripped of its 'critical mass' veil, the Law School's program is revealed as a naked effort to achieve racial balancing."[83] For the Chief Justice, there is no better indication that critical mass may be about racial balancing than the existence of what he saw to be two crucial facts. First, there appears to be different critical masses for different underrepresented groups. Second, there is, for him, a general consistency in the percentage of minorities admitted to the Law School. As to the first fact, the Chief Justice observes: "Respondents explain that the Law School seeks to accumulate a 'critical mass' of *each* underrepresented minority group. But the record demonstrates that the Law School's admissions practices with respect to these groups differ dramatically and cannot be defended under any consistent use of the term 'critical mass.'"[84]

The argument here is that if the notion of critical mass is meant to refer to the minimum number of students from underrepresented groups that are required to achieve the asserted objectives (reducing or eliminating isolation, stereotypes, or the casting of minorities as spokespersons for their race, etc.), there is no conceivable reason why the critical mass for Native Americans should differ from that for African-Americans. For the Chief Justice, the difference is closely related to the number of applicants in each minority group. By looking at the figures for 1995 to 2000, Rehnquist claimed that the "the percentage of admitted applicants who were members of these minority groups closely tracked the percentage of individuals in the school's

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[81] *Id.*

[82] *Id.* at 355-56 (Thomas, J., dissenting) ("[T]he Law School seeks to improve marginally the education it offers without sacrificing too much of its exclusivity and its elite status."). At another point Justice Thomas asserts that the policy of the Law School is only a façade—"it is sufficient that the class looks right, even if it does not perform right." *Id.* at 372.

[83] Grutter v. Bollinger, 539 U.S. 306, 379 (2003). For Justice Thomas' view, see *id.* at n.12.

[84] *Id.* at 380-81 (citation omitted).

applicant pool who were from the same groups."[85] The aesthetic theory appears to understand critical mass as a case of perfect analogy to the concept's original and literal use. The social equivalent of an explosion is the credibility of racial aesthetic, and the equivalent of the mass that is critical for making that racial aesthetic credible is the admission of a number of minorities proportionate to their number in the application pool.

The aesthetic argument seems to me to be less than persuasive for a number of reasons. First, it seems rather cynical to regard the purpose of the admissions process as designed simply to satisfy the perceptual needs of university officials and to think of admitted students in the same way that one thinks of the number and kind of chairs and desks that adorn the building. Second, even if one were to accept aestheticism as the only perceivable goal or as a major goal, the aesthetic argument cannot explain why proportionality to the pool of applicants rather than proportionality to the relevant territorial community should be the test of credibility. Third, both Chief Justice Rehnquist and Justice Thomas simply had concluded that the admissions process was defined by a quota system and therefore thought that the notion of critical mass was being invoked to mask that quota system. Critical mass was, at the end, the wrong phrase. The idea of an aesthetic objective is a throwaway concept advanced to adorn the argument that critical mass is simply synonymous with quota.

In any case, even within Justice Thomas' notion of racial aesthetic one could make a plausible argument that a more important value than mere perceptual comfort among administrators is implicated by the presence of minorities who are supposed to make the racial aesthetic work. One way to view what Justice Thomas calls racial aesthetic is as a process of justifying the legitimacy of the particular composition of the student body both within and outside the institution. Legitimacy can be understood in moral or sociological terms.[86] A particular process or arrangement could be said to be legitimate from the moral point of view because it adheres to or is consistent with certain moral principles or norms. In this sense, legitimacy is normative. But an act, an institutional arrangement, or a process could be said to be legitimate in a sociological or empirical sense. Here legitimacy is a matter of social acceptance, attitudes, and perception of the people whose lives are meant to be regulated by the act, institutional arrangement, or process in question. Sociological legitimacy is an important ingredient of democracy, for whether the public believes that a particular process is just will partly determine how effective the process will be.

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[85] *Id.* at 383.

[86] Frank Michelman draws a similar distinction. *See* Frank Michelman, *Human Rights and the Limits of Constitutional Theory*, 13 RATIO JURIS 63, 64-65 (2000).

So, what Justice Thomas derisively calls racial aesthetic could perhaps be recast as being about the important value of legitimacy, about sending signals to those inside and outside the institution that the educational process treats all its citizens fairly and justly. Indeed, Justice O'Connor in her majority opinion does refer to the importance of sociological legitimacy when she notes the importance of making leadership opportunities "visibly open."[87] What the public inside and outside thinks about the fairness of the process matters in a democratic system and is not to be dismissed easily as Justice Thomas seems to have done.

### *C. Critical Mass and the Concept of the Role Model: Attitudinal Transformation as a Public Good?*

The notion of critical mass could be understood in terms of the idea of role models. In another article I have explored in some detail the concept of the role model and the various uses to which the phrase has been put.[88] My purpose here is therefore not to engage in another extended inquiry into the notion of the role model, but rather to see whether the goals for which the notion of critical mass is invoked could be understood in terms of role models.

In its simplest form the concept of role model refers to a socializing process where individuals aspire to emulate other individuals that they regard as performing admirably in certain roles.[89] In terms of underrepresented groups, the presence of members of such groups in an institution such as the University of Michigan School of Law will provide visible reassurance to incoming members from those groups that they can indeed perform in the role that they are cast. One could ask why a minority student, say a black student, would need another black student on whom to model himself or herself. Why can't he use students from other racial groups as role models to aspire to certain goals? The district court in *Wygant v. Jackson Board of Education*[90] offered an answer to the question. Referring to teachers, the

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[87] "In order to cultivate a set of leaders with legitimacy in the eyes of the citizenry, it is necessary that the path to leadership be visibly open to talented and qualified individuals of every race and ethnicity. All members of our heterogeneous society must have confidence in the openness and integrity of the educational institutions that provide this training." *Grutter*, 539 U.S. at 332.

[88] Addis, *Role Models*, *supra* note 16, at 1384.

[89] *See* Addis, *Role Models*, *supra* note 16, at 1393; *see also* GUTMANN & THOMPSON, *supra* note 74, at 328 ("To be a role model is to serve as a positive social symbol of success, communicating by one's visibility and the importance of one's position . . . .").

[90] Wygant v. Jackson Bd. of Educ., 546 F. Supp. 1195 (E.D. Mich.1982), *aff'd*, 746 F.2d 1152 (6th Cir. 1984), *rev'd*, 476 U.S. 267 (1986).

district judge observed: "Teachers are role-models for their students. More specifically, minority teachers are role-models for minority students. *This is vitally important because societal discrimination has often deprived minority children of other role models*."[91] The last sentence of the quote lends itself to many interpretations.[92] One plausible interpretation is that the district court was simply taking note of the fact that given the history of the United States and the narratives of difference that surround it, white teachers cannot as easily serve as role models for black students.[93] Given the fact that discrimination against blacks has historically rested on the proposition that blacks lack the intellectual capacity that white Americans possess, the notion of a white teacher, as well as a white student, serving as an example of what a black student can achieve intellectually will lack credibility to that student. The presence of minority students (and minority teachers) will provide a more credible signal of affirmation and recognition of these students.[94]

And how does critical mass relate to the notion of role model as I have described it above? The credibility of the signal of affirmation and recognition "will be enhanced once there is a 'critical mass' of members of the marginalized groups in any particular enterprise."[95] The district judge in *Oliver v. Kalamazoo Board of Education* makes the point in relation to minority teachers:

> [A] well-respected authority on matters concerning school desegregation and a co-author of the court-ordered study of the Kalamazoo School District . . . [gave] uncontradicted testimony . . . that in a district like Kalamazoo unitary status cannot be achieved until a "critical mass" of Black teachers and administrators has been hired. In determining what number, or percentage, of Black teachers will form a critical mass for Kalamazoo, [the expert suggested that the] major consideration was to achieve a number which would insure that Black students had enough role models . . . .

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91 *Id.* at 1201 (emphasis added).

92 *See* Addis, *Role Models*, *supra* note 16, at 1435-36.

93 The idea of role models was invoked by a Cornell Law School student to highlight its importance in relation to gender as well. "Close to half of the law school students are women, and yet there are only five female faculty members. I seek them out for my classes, look to them as role models. I want there to be more." Metta Winter, *Cheating a Critical Mass: The Woman [sic] Students*, CORNELL L. F., Mar. 5, 1991, at 5 (quoting an unnamed third-year student).

94 This is not to say that whites cannot become role models for blacks and vice versa, but simply to note that on the specific matter of intellectual capacity given the history of the country and the narrative of difference, it will be more reassuring for a black student to see other black students performing in the particular role. Of course, I am mindful of the possibility that there could be negative role modeling from black students. *See* THOMAS SOWELL, AFFIRMATIVE ACTION AROUND THE WORLD: AN EMPIRICAL STUDY 143 (2004). But if that is the condition of the particular situation, then it is clear that no white role modeling would make much difference either.

95 *See* Addis, *Role Models*, *supra* note 16, at 1461.

> [The expert stated that] the need for role models is important because they can encourage minority students to higher aspirations and at the same time work to dispel myths and stereotypes about their race.[96]

The notion of critical mass is related to the idea of role model in two senses. First, the presence of a number of minority students will be a credible reassurance to each of those students that their presence is normal rather than exceptional and that they are indeed capable of performing the roles for which they are selected.[97] Second, as the district court observed, the larger the number of minority groups the easier it would be for each member of an entering class to have a role model, for with increase in number will come increase in the diversity of minority students, thus offering diverse sources of role models. A critical mass of minority students will not only provide diverse role models but may also lead to the transformation of the very conception of the roles that those minorities are meant to occupy.[98] By this I mean to suggest that the dialectic between the roles occupied and the identities involved will resignify the role itself. It will change established understandings of the role.[99] To use a term that Frank Michelman appropriated, borrowing from Robert Cover, this can be conceived of as "jurisgenerative politics."[100]

The role model argument has of course not been endorsed by the Supreme Court.[101] And it may also end up being a double-edged argument for those whom the concept is meant to help. Justice Scalia's comment in *Grutter* makes the point. He observes:

> If it is appropriate for the University of Michigan Law School to use racial discrimination for the purpose of putting together a "critical mass" that will convey generic lessons in socialization and good citizenship, surely it is no less appropriate—indeed *particularly* appropriate—for the civil service system of the State of Michigan to

[96] Oliver v. Kalamazoo Bd. of Educ., 498 F. Supp. 732, 747-48 (W.D. Mich. 1980).

[97] One second-year Cornell Law School Student was quoted as having observed thus: "If you're a minority member, you can psychologically set yourself up for a fall. When there are only six other minority students in your class, you start asking yourself if you really can do the work." *See* Winter, *supra* note 93.

[98] *See* Addis, *Role Models*, *supra* note 16, at 1466 ("[R]ole models from marginal groups have the potential and the power to transform the roles they occupy, including the very conception of those roles, especially if the members of the group represent a critical mass in the particular enterprise. . . . [They] can actively redefine their positions using the very cultural resources and horizons of significance that have been excluded from the process of role-constitution."); *see also id.* at 1462.

[99] For a description of the result of such dialectic, see Seyla Benhabib's notion of "democratic iterations" in THE RIGHT OF OTHERS: ALIENS, RESIDENTS AND CITIZENS 19, 209 (2004).

[100] Robert Cover, Nomos *and Narrative*, 97 HARV. L. REV. 4 (1983); Frank Michelman, *Law's Republic*, 97 YALE L.J. 1493 (1988).

[101] Wygant v. Jackson Bd. of Educ., 476 U.S. 267, 276 (1986) (criticizing the concept as "too amorphous a basis for imposing a racially classified remedy.").

do so.[102]

If we need minority role models in law schools and a critical mass to make role modeling effective and credible, why should this not be applicable in areas where non-minorities (and men) are underrepresented? Say, for example, preference for non-minorities in certain urban civil service hires that are dominated by minorities, or some preference for men in admission to nursing schools, a profession that has traditionally been viewed as a female profession.

There are two responses to the argument. First, as Gutmann and Thompson note this "reversal effect" should not be seen as a weakness rather than a strength of the role model argument.[103] It may not be a bad thing to use the role model concept to signal to whites and to men that the jobs and occupations normally occupied by women and/or minorities are in fact worth pursuing. And the presence of underrepresented groups in areas such as inner city civil services and nursing may be a good thing not only because the recipients of care and services will have had access to a wide range of people but also because such actions will undermine stereotypes about those roles. Second, given the fact that nonminorities are generally in positions of authority both in government and in the private sector and that there has never been the narrative of devaluation and suspicion about competence in relation to that group, the need for nonminority role models for those individuals in areas where minorities tend to numerically dominate seems rather unpersuasive. There have been reports that show that when a token belongs to a high status group (such as whites and men) often his or her tokenism is not viewed as an indication that his group is not competent to fill the particular role, but rather that members of that group do not value the situational status (e.g., a white male nurse). Indeed, often observers apparently adjust the token's professional role (e.g., white male nurse) to fit the expected high position of the token's category (e.g., the nurse is called "Doctor").[104]

### D. *Critical Mass and the Enrichment and Transformation of the Educational Experience*

The University of Michigan Law School advanced the notion of critical mass not in aid of any of the goals discussed above, but in defense of what might be referred to as the enrichment and transformation of the educational experience. Justice O'Connor, writing for the majority, noted that the Director of Admissions testified

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[102] Grutter v. Bollinger, 539 U.S. 306, 347-48 (2003).

[103] *See* GUTMANN & THOMPSON, *supra* note 75, at 330.

[104] *See* Kanter, *Some Effects of Proportions on Group Life*, *supra* note 1, at 980-81.

that "'critical mass' means 'meaningful numbers' or 'meaningful representation,' which she understood to mean a number that encourages underrepresented minority students to participate in the classroom and not feel isolated."[105] The dean of Vanderbilt Law School, who was a professor at Michigan Law School at the time the 1992 admissions policy was adopted testified that, "when a critical mass of underrepresented minority students is present, racial stereotypes lose their force because nonminority students learn there is no 'minority viewpoint' but rather a variety of viewpoints among minority students."[106] The argument here is that having a critical mass of minority students will transform or enrich the educational experience in one of several ways. First, it encourages minority students to participate in the educational process. That participation, the argument goes, will enrich and transform the educational experience of all students to the extent that the backgrounds of these minority students inform the nature of the issues that become part of the conversation, as well as the perspectives through which the issues are viewed and analyzed.[107] Second, the participation of a critical mass of minority students will transform not only the subject of deliberation but the identity of the deliberators as well. The argument is that the greater the number of minority students in a class, the greater the chance that there would be a diversity of viewpoints among minority students. The assumption of diversity is based on two factors: statistically, it is likely that there will be diversity of views as numbers grow; and the presence of a critical mass of minority students will free some minority students from a feeling that they have to speak for the race or the ethnic group to which they belong. The existence of diversity of viewpoints among minority students will in turn reduce (at least destabilize) the stereotypical view of nonminorities that members of minority groups have monolithic views. According to this view, the relationship between critical mass and the destabilization of stereotypes is a very close one.[108] Experimental evidence has also shown that the presence of minority (black) collaborators influences the perceived dynamics of a discussion and improves the critical thinking of white students.[109]

It seems evident that the Court recognized the importance, and even compelling nature, of the mission of educational institutions to

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[105] *Grutter*, 539 U.S. at 318.

[106] *Id.* at 319-20.

[107] *See* Anthony Lising Antonio et al., *Effects of Racial Diversity on Complex Thinking in College Students*, 15 PSYCHOL. SCI. 507 (2004).

[108] "[W]hen a critical mass of underrepresented minority students is present, racial stereotypes lose their force because nonminority students learn there is no 'minority viewpoint' but rather a variety of viewpoints among minority students." Grutter v. Bollinger, 539 U.S. 306, 319-20 (2003) (O'Connor, J., citing Dean Kent Syverud).

[109] Antonio, *supra* note 107, at 508.

enrich and transform the educational experience of their students by assembling a diverse student body.[110] Whether it is attitudinal transformation (role model) or the transformation of the educational experience that is the goal in whose service the notion of critical mass is drafted, the next and the more difficult question is how does one know whether the point of criticality has been achieved in relation to the number of minority students required to pursue the goal? What precisely does critical mass mean in the context of student admissions? In relation to an explosion one would know exactly how much fissionable material is needed to start the explosion, or to achieve the necessary transformation. How does one assess criticality in relation to the physics of society?

## IV. WHAT IS CRITICAL MASS? THE ISSUE OF FIT

There are many different critical mass models. What I shall do in this section is explore some of them to see which versions apply to the affirmative action context and which among them is philosophically and constitutionally defensible.

### A. *Critical Mass as Actual Minimum Numbers*

One version of critical mass refers to a situation where there is a requirement of a precise minimum number of actors before other individuals will act in a particular way. Thus, for example, an alumna tells a law school that she will give money if at least twenty other alumnae have contributed to the school's fund. A professor agrees to teach a new course only if a minimum of twenty people are registered for it. The critical mass for these individuals is twenty people. It is a precise number and what is crucial is that the required number be reached.[111] This is clearly not the sense in which the notion of critical mass is used in most social and political circumstances, including in the area of affirmative action.

There are three conditions in addition to numbers that must exist for there to be a critical mass in the sense that the term is popularly used. First, it is not just the numbers but the immunity that those numbers provide (or are thought to provide) the actor that is important. One crosses a busy intersection against a red light not simply because a

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[110] Neither the petitioner nor the United States questioned the validity of the goals advanced by the University of Michigan Law School in *Grutter*.

[111] *See* SCHELLING, MICROMOTIVES, *supra* note 3, at 95-96.

certain number of people have crossed, but because of perceived safety that come with those numbers. A minority student speaks in class not simply because a certain number of other minority students have spoken, but because of what that number may imply to the student about the nature of the community. Some women legislators advocate the transformation of political culture and the adoption of political agenda favorable to the interest of women not because there are other women present in the legislature, but rather what that number implies about immunity from put-downs, ridicule and dismissive attitudes from their male colleagues. Second, the immunity in numbers is tied not to an absolute number but to some sort of proportion or range. Third, it is often the case that critical mass in the sense that it is often utilized assumes an interaction between actors who affect the actions of one another. The interaction may be explicit or implicit.[112] In the affirmative action context the interaction will necessarily be explicit.

### B. *Critical Mass as an Analogy*

Another sense of critical mass may accept the notion of a fixed number, but it does so in the context of the interaction of actors and the immunity of numbers. Here, the use of critical mass in the social and political world is to be analogized to the way the phrase is employed in its original, scientific context. In the scientific context, a specific amount of fissionable plutonium or uranium is required to start and sustain a chain reaction of nuclear fission. Like the neutrons in the chain reaction, it is in the interaction among actors (in our case students) that a change is supposed to occur.

The analogy to the scientific use of the term could be perfect or imperfect. If one were to adopt an argument of perfect analogy, one would say that in the same way that a precise amount of mass is needed to create an explosion, one would need to specify the precise number of students needed for an achievement of the public good or educational transformation. Absent this, the argument goes, the concept of critical mass would be used imprecisely and hence improperly. This was the point that Justice Scalia pressed during the oral argument in *Grutter v. Bollinger* when he put a series of questions to the lawyer representing the University of Michigan as to what the Law School meant when it

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[112] By direct (explicit) interaction I mean to refer to circumstances where individuals consciously and directly engage one another. An example would be minority students engaging members of the majority group on a whole host of issues inside and outside the classroom. By indirect (implicit) interaction I mean to refer to circumstances where the actions of participants in a particular enterprise (e.g., crossing against the light) provide the context in which fellow participants make decisions even though participants do not directly (explicitly) engage one another about the particular enterprise or about the consequences of engaging in the particular act.

defined critical mass as "meaningful" or sufficient numbers. Justice Scalia observed: "When you say sufficient numbers, you're—I mean that suggests to me the there is—there is some minimum. Now, you don't name it. But there has to be some minimum."[113] The lawyer responded that there was no such minimum, prompting the following exchange between the Justice and the lawyer:

Scalia: "Is two percent a critical mass, Ms. Mahoney?"

Mahoney: "I don't think so, Your Honor."

Scalia: "Okay. Four percent?"

Mahoney: "No, Your Honor, what—"

Scalia: "You have to pick a number, don't you?"

Mahoney: "Well, actually what—"

Scalia: "Like eight, is eight percent [a critical mass]?"[114]

The above exchange indicates that for Justice Scalia only perfect analogy will do. Either you use the concept analogically or you would be misusing it. One cannot talk about criticality, as the Law School did, without indicating the precise threshold. The Law School's reference to "meaningful numbers"[115] or "meaningful representation,"[116] of course, was meant to suggest that there was a tipping point, but both the Dean of the Law School and the Director of Admissions were unable or unwilling to express criticality in terms of numbers. The district court observed that Dean Lehman was "unable to quantify 'critical mass' in terms of numbers"[117] and neither was the Director of Admissions, Ms. Munzel.[118] Indeed, Ms. Munzel testified before the court that there "is no number . . . which constitutes critical mass."[119] So, it is clear that the Law School's administration was unprepared to suggest that the notion of critical mass entailed specific numbers or even a range of numbers.

Apparently, perfect analogy will not do when it comes to the use of critical mass in relation to the physics of society. Then, what will work? What does critical mass mean? To say it means "meaningful numbers" without suggesting what constitutes "meaningful" is to engage in a tautology. "Meaningful" is simply another term for "critical." Or to say, as the Director of Admissions testified, that critical mass is to be contrasted with tokenism[120] is not to have said much about

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[113] *See* Transcript of Oral Argument at 37, Grutter v. Bollinger, 539 U.S. 306 (2003) (No. 02-241), *available at* http://www.supremecourtus.gov/oral_arguments/argument_transcripts/02-241.pdf.

[114] *Id.* at 39-40.

[115] Grutter v. Bollinger, 137 F. Supp. 2d 821, 832, 834 (E.D. Mich. 2001).

[116] *Id.* at 832.

[117] *Id.* at 834.

[118] *Id*. at 833.

[119] *Id.*

[120] *Id.* The notion of tokenism as the opposite of critical mass has been invoked in the

what exactly critical mass means. Tokenism cannot tell us any more about its apparent opposite, critical mass, than critical mass can tell us about what numbers we should consider mere token.

Perhaps there is criticality even in relation to the social field, although it is in the nature of things that the critical point cannot be as precise as it is in the physical sciences. In relation to social physics one "cannot afford to do away entirely with individual psychology."[121] Humans are not neutrons. So, perhaps, if one were to use critical mass as an analogy, it would have to be as an imperfect analogy. I will define imperfect analogy here as meeting two conditions. First, criticality is defined not by a specific number, but by a range of numbers or percentages. Second, the sorts of interactions among human actors that would lead to a certain behavior or transformation are very different from the kinds of interactions among neutrons that would lead to explosion. Put simply, although there is analogy in the way that the notion of critical mass is used in the social and physical sciences (there is a minimum threshold and an interaction among the constituent parts of that threshold), there are differences in the nature of the threshold and the nature of interaction among the constituent part of the threshold.

The notion of critical mass is amenable to empirical specification in the social field, though not to the same precision as in the sciences. In *Comfort v. Lynn School Committee*, Judge Nancy Gertner seemed to have held to that position. Judge Gertner observed that critical mass "is not a case of scientific precision . . . and scientific precision should not be required."[122] To say there is no precision is not, however, to say that there can never be empirical evidence as to what the threshold will be to achieve or produce this or that public good. As I shall show later, some social science studies have concluded that the presence of a percentage of certain actors or actions will incline others to act in a particular way. Thus, for example, when the presence of women in management reached a certain percentage, the attitude of coworkers (both men and women) towards women colleagues changed positively.[123] When the percentage of women in legislative bodies reached a certain percentage point some studies have shown that there is evidence of "increased feminisation of political agenda"[124] and political culture. And there

political realm as well, especially in relation to the representation of women in legislative bodies. *See* Jane S. Jaquette, *Women in Power: From Tokenism to Critical Mass,* 108 FOREIGN POL'Y 23 (1997).

121 BALL, *supra* note 14, at 371.

122 Comfort v. Lynn Sch. Comm., 263 F. Supp. 2d 209, 263 (D. Mass. 2003).

123 *See* Lortie-Lussier & Rinfret, *supra* note 1, at 1986 ("As their proportion reaches 20%, women benefit from significantly more positive evaluations of their status and contribution to organizational culture, by women and men alike."); *see also id*. at 1988 ("Although our findings preclude locating the critical mass at any given proportionate size, they suggest that reaching 20% is a turning point in terms of improving the perception of female managers.").

124 *See* Grey, *supra* note 2, at 19, 28.

have been studies showing that when the number of minority students fell below a certain level, "members of a racial minority in a given setting feel isolated or stigmatized."[125] Generally, the idea that the presence or action of a certain percentage of individuals will trigger other individuals to act in a particular way or to hold a certain attitude towards a certain segment of the population has been asserted to exist in various other fields.[126] The notion of imperfect analogy will therefore hold that even though there cannot be a precise number analogous to the precise mass that is needed in nuclear fission, there is, and has to be, a point of criticality that is expressed in terms of a range of percentages and that this view has empirical support.[127] But the University of Michigan Law School administration was not prepared to accept numbers even in terms of percentages and ranges.[128] If the notion of critical mass did not constitute a number or even range of numbers or percentages, then what did the concept refer to? If analogy in its perfect or imperfect sense does not define critical mass, then what does?

Clearly, the major reason for the reluctance of the University of Michigan School of Law to accept numerical ranges or percentages was the fear that doing so will lead to the constitutionally fatal accusation that critical mass is simply another term for a quota. Indeed, Justice Scalia made a gallant effort during the oral argument to get the lawyer for the University of Michigan to give a number or range of numbers or percentages to indicate the point of criticality. The attempt to extract numbers or percentages seemed to have been informed by the belief that once one gets the lawyer to admit that there is such a minimum the lawyer is trapped in an unconstitutional quota zone. Indeed, after failing to get the lawyer for the University of Michigan to admit that the notion of critical mass required a minimum number, Justice Scalia finally let on what partly motivated his questions about number: "Once you use the term critical mass . . . you're into quota land."[129] But whatever motivated the Law School officials and their lawyer not to admit that critical mass suggests some numbers or percentages, it is legitimate to ask how they understood critical mass if not as a perfect or an imperfect analogy.

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[125] *Comfort*, 263 F. Supp. 2d at 237 ("There is no 'magical number,' in Dr. Killen's [expert witness] experience, that indicates a critical mass, but she cited studies describing a 20% figure below which members of a racial minority in a given setting feel isolated or stigmatized. Dr. Dovido underscores a critical mass estimate of 20%—a number well-established in the literature and affirmed in his own research as a prerequisite to making a meaningful amount of intergroup contact possible.").

[126] *See* SCHELLING, MICROMOTIVES, *supra* note 3.

[127] *See infra* Part IV.D.

[128] Grutter v. Bollinger, 137 F. Supp. 2d 821, 834 (E.D. Mich. 2001).

[129] Transcript of Oral Argument at 40, Grutter v. Bollinger, 539 U.S. 306 (2003) (No. 02-241), *available at* http://www.supremecourtus.gov/oral_arguments/argument_transcripts/02-241.pdf.

### C. *Critical Mass as a Metaphor*

Perhaps the law school administration could simultaneously invoke critical mass and deny that it entails a specific number or range of numbers by claiming that it is using the phrase not as an analogy, but as a metaphor. Indeed, as Pam Oliver and her colleagues note: "Social movement activists and scholars often use the term . . . [as] a metaphorical way to refer to the idea that some threshold of participation or action has to be crossed before a social movement 'explodes' into being."[130]

Now, legal discourse is of course rife with metaphors. Courts worry about slippery slopes.[131] They talk about scales of justice[132] and leveling the playing field.[133] They want to maintain a wall of separation between church and state[134] while engaging in a balancing act in other areas.[135] Some petitioners are said to have standing[136] while some controversies are deemed to be not yet ripe.[137] The Constitution is characterized as color blind[138] and judicial decision-making as "bricklaying."[139] And some commentators even suggest that law itself, which is often viewed as the "bulwark of freedom," may be viewed as a metaphor.[140] That legal discourse is full of metaphors is not surprising. As George Lakoff and Mark Johnson note, "Metaphor is in everyday language and thought."[141] Metaphors serve the purpose of appropriating one set of experiences to describe or understand another set of

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130 Oliver et al., *A Theory of Critical Mass I*, *supra* note 17, at 523.

131 *See, e.g.*, Commodity Futures Trading Comm'n v. Schor, 478 U.S. 833, 852 (1986).

132 *See, e.g.*, *In re* Murchison, 349 U.S. 133, 136 (1955).

133 *See, e.g.*, S. Natural Gas Co. v. Fed. Energy Regulatory Comm'n, 813 F.2d 1111, 1112 (11th Cir. 1987).

134 *See, e.g.*, Lynch v. Donnelly, 465 U.S. 668, 673 (1984).

135 *See* Kassel v. Consol. Freightways Corp., 450 U.S. 662, 698 (1981).

136 For a thorough analysis of the metaphor of standing in legal, especially constitutional, discourse, see Steven Winter, *The Metaphor of Standing and the Problem of Self-Governance*, 40 STAN. L. REV. 1371 (1988).

137 *See* Laird v. Tatum, 408 U.S. 1 (1972).

138 *See* Plessy v. Ferguson, 163 U.S. 537, 559 (1896) (Harlan, J., dissenting).

139 *See* BENJAMIN CARDOZO, THE NATURE OF THE JUDICIAL PROCESS 149 (8th ed. 1985).

140 *See* MILNER S. BALL, LYING DOWN TOGETHER: LAW, METAPHOR, AND THEOLOGY 23 (1985). Towards the end of the book Ball suggests that law may be seen as a metaphor for life or death in that it is seen by most of us as a protective force most of the time, while for some of us it is an oppressive force some of the time. Ball's book is an attempt to persuade readers that the popular metaphor of law as the "bulwark of freedom" should be replaced by an alternative metaphor of law as a "medium." *Id.* at 123. *See also* Burr Henly, *"Penumbra": The Roots of a Legal Metaphor,* 15 HASTINGS CON. L.Q. 81 (1987) ("[T]he very act of judging requires category jump—from fact to law, from passion to principle, from person to rules. In this sense, all law is metaphoric.")

141 GEORGE LAKOFF & MARK JOHNSON, METAPHORS WE LIVE BY ix (1980); *see also id.* at 239 ("Metaphor is as much a part of our functioning as our sense of touch, and as precious.").

experiences.[142] They allow us to identify one object with another with the hope of getting better insights into the one by looking through the experiences of the other. In this sense, metaphor "is the paradigmatic device for pointing out analogies and making comparisons which cross the bounds of our usual categories and concepts."[143] It would, therefore, not be the first time that a metaphor would have been used to describe a legal phenomenon.

How are metaphors different from analogies? After noting that a great "deal of recent attention has been devoted to the relationship" between metaphors and analogies in recent times,[144] Cass Sunstein offers examples of how the two differ, although he thinks that a particular statement could be intended and used both as an analogy and as a metaphor.[145] If the statement "abortion is murder" is intended as an analogy "the speaker is claiming, and understood to be claiming, that abortion is really murder in the relevant respects."[146] On the other hand, if the phrase was intended as a metaphor, it is clear that the "speaker believes that abortion is not literally murder," but rather the speaker "is seeking to cast some light on the subject precisely by departing from literal description."[147]

Take another statement that is obviously a metaphor: "Holmes was a lion of a judge."[148] Clearly, this statement isn't meant to analogize Justice Holmes with a lion, but to communicate a general idea that Justice Holmes was a powerful and highly regarded judge. One of course, could start to think of analogies such as that a lion has a big roar and analogically Justice Holmes had a powerful voice. But that would not communicate the full sense of the metaphor, for we clearly are not drawing analogies between the lion's roar and Justice Holmes' voice. Indeed, to the extent that we think of Justice Holmes' voice, it will be to

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[142] Aristotle says of metaphor that it "consists in giving the thing a name that belongs to something else." ARISTOTLE, THE BASIC WORKS OF ARISTOTLE 1457b 6-7 (Richard McKeon ed., 1941), *cited in* Ron Bontekoe, *The Function of Metaphor*, 29 PHIL. & RHETORIC 209 (1987); *see also* TERENCE HAWKES, METAPHOR 1 (1972) (explaining that metaphor "refers to a particular set of linguistic processes whereby aspects of one object are 'carried over' or transferred to another object, so that the second object is spoken of as if it were the first."); MARTIN J. GANNON, CULTURAL METAPHORS: READINGS, RESEARCH TRANSLATIONS, AND COMMENTARY 1 (2001) (defining metaphors as "the use of one phenomenon and its characteristics to describe another phenomenon.").

[143] *See* EVA FEDER KITTAY, METAPHOR: ITS COGNITIVE FORCE AND LINGUISTIC STRUCTURE 19 (1987).

[144] *See* CASS SUNSTEIN, LEGAL REASONING AND POLITICAL CONFLICT 70 (1996) [hereinafter SUNSTEIN, LEGAL REASONING]; *see also* ON METAPHOR (Sheldon Sacks ed., 1979).

[145] "Consider the statement 'Abortion is murder,' a statement that in the abstraction could be intended and received either as a metaphor or as an analogy." SUNSTEIN, LEGAL REASONING, *supra* note 144.

[146] *See id.*

[147] *Id.*

[148] *Id.*

refer to the power of his judicial writing and its influence rather than the volume of his voice. The reference to a lion here is simply a reference to the idea of a great judge. Perhaps the phrase "critical mass" may be understood to be metaphoric in the same sense that the sentence "Holmes was a lion of a judge" is metaphoric. This may be what Dean Jeffrey Lehman meant when he declared: "Critical mass is not a numerical quota. It's an idea, just like the word 'tall' is an idea, not a specified height."[149] In the same way that the reference to a lion is a reference to the idea of a great judge that does not necessarily draw analogies between Holmes and a lion, and in the same way that the reference to "tall" is a reference to a height that does not necessarily refer to a particular height, it may be argued that the phrase critical mass refers to the idea that "people's behavior or people's choices depend on the behavior or choices of other people."[150]

But the above formulation leaves numerous questions unanswered. What, for example, is the practical implication of viewing critical mass as a metaphor? To say that "Holmes was a lion of a judge" is, of course, to attempt to shape perceptions about Justice Holmes in a positive direction. So, the practical consequence of that particular metaphor is the shaping of attitudes. But what is the practical implication of using critical mass as metaphor in the affirmative action or any other area? How does one get from this general metaphor to the policy choices that the Michigan University School of Law wished to pursue? To say that people's behavior and choices are dependent on the choices and behavior of others is not to have proved the specific assertion that the Law School must be allowed to use race as a factor in the admissions process, much less to have shown what "meaningful numbers" are that have to be admitted. Metaphors may orient the nature of the debate by suggesting alternative mental images, but they do not dictate or even suggest a certain policy outcome.

### D. *Critical Mass as an Imperfect (Soft) Analogy*

It seems that there is no alternative but to view critical mass as an analogy rather than as a metaphor. The idea of a metaphor in relation to the affirmative action field is perhaps used to resist the idea of perfect analogies. Analogies often start as devices to liberate thought, but often end up cabining or enslaving it.[151] Often there is an attempt to match

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[149] *See* Miller, *supra* note 63.

[150] *See* SHELLING, MICROMOTIVES, *supra* note 3, at 14, 91-102; Oliver et al., *A Theory of Critical Mass*, *supra* note 17, at 524.

[151] Ironically, a similar statement was made by Judge Cardozo about metaphors. He said: "Metaphors in law are to be narrowly watched, for starting as devices to liberate thought, they

every aspect of the phenomenon to be comprehended with aspects of those from which the analogy is borrowed. What this does, of course, is cabin the new phenomenon to the very limits of the old, sometimes in absurd ways.

But in many ways metaphors are not any more helpful. Indeed, Judge Cardozo expressed the same sentiments about metaphors that I have just expressed about analogies.[152] At times, metaphors may be simply used as a substitute for thinking through or developing a theory of the phenomenon that is to be captured by the metaphor. This is perhaps what Joshua Fishman meant when he said "Where theory is weak, metaphors flourish."[153] Jeremy Bentham was even more straightforward in his conviction that metaphors are not reasons and are in fact the antithesis of the law.[154] Unlike Bentham and Fishman, however, I do believe metaphors to be an important and inevitable part of legal discourse. But whatever one thinks about the value of metaphors generally, the notion of metaphor will not work in the particular circumstance here. There is no escaping the fact that some form of analogy is what will work. As I noted earlier, it would make sense to think in terms of imperfect rather than perfect analogy. The notion of imperfect analogy will capture the basic differences between the physical sciences and the physics of society. What are the differences?

First, in the social field the phrase cannot have the precision that it has in the scientific field. We may know exactly what amount of fissionable plutonium and uranium is needed to start and sustain a chain reaction (or the critical temperature at which water changes from liquid to gas).[155] Outside the scientific area, however, the notion of critical mass can only be used to refer to a range rather than a specific amount or number. Pedestrians that gather at a busy intersection awaiting the chance to cross against the red light will do so if each concludes that enough additional pedestrians will cross such that a group will be formed sufficient enough to stop the traffic.[156] Although a certain size of the group would encourage an individual to cross, it would be almost impossible to determine the exact number of the group that would embolden an individual to start crossing. One could at best only talk in terms of a range of percentages.[157] Now, the fact that one could not

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end often by enslaving it." Berkey v. Third Ave. Ry. Co., 155 N.E. 58, 61 (N.Y. 1926).

152 *Id.*

153 *See* Joshua A. Fishman, *Endangered Minority Languages: Prospects for Sociolinguistic Research*, 4 INT'L J. ON MULTICULTURAL SOCIETIES 270, 272 (2002).

154 *See* 1 JEREMY BENTHAM, WORKS 92 (1843).

155 *See* BALL, *supra* note 14, at 83.

156 *See* SCHELLING, MICROMOTIVES, *supra* note 3, at 92-93.

157 Schelling suggested that in a mixed neighborhood a family will decide to move out if more than a third of the neighbors are of a different color. *Id.* at 101. In a number of studies involving

come up with a precise number does not, of course, make the occurrence of the event less likely or the need for a threshold unnecessary.

Second, the way in which, or conditions under which, such behaviors are influenced in the social area is not simply a matter of numbers, but also a question of the nature of the participants and the system within which the interaction takes place. Even in relation to the atomic bomb, it can be argued that "mass" is not strictly a concept of numbers. As Thomas Schelling put it: "The density, purity, and shape of the uranium, as well as its mass, together with any reflective coating, will determine whether or not the lump 'goes critical.'"[158] But it is certainly the case that whether there is a critical mass of students in a particular class for a particular purpose is partly going to depend on the character and identity of the students admitted, the nature of the entire class with which they will interact, and the processes and institutions through which the interaction takes place.[159] Put simply, critical mass in the social field describes a highly contextual process.[160] But to repeat: the fact that critical mass in relation to social actions and social behavior is contextual is not to say that therefore there is no threshold or that the threshold is unknowable or unpredictable.

Given the claims in the last two paragraphs about the nature of critical mass in relation to the physics of society, it is reasonable to conclude that a decision as to what size would entail a critical mass in relation to an admissions policy can only be determined case by case by those who have access to the profile of the student body admitted and

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gender and race researchers have concluded that 20 percent of the relevant population may provide the critical mass, the threshold number. *See* Lortie-Lussier & Rinfret, *supra* note 1, at 1985-86; Comfort v. Lynn Sch. Comm., 263 F. Supp. 2d 209, 237 (D. Mass. 2003).

[158] *See* SCHELLING, MICROMOTIVES, *supra* note 3, at 95; *see also* Lightman, *supra* note 30 ("What you call the critical mass depends on the density. If you increase the density, the critical mass becomes dramatically smaller.") (citing a letter from physicist Jeremy Bernstein).

[159] "Though perhaps not in physical and chemical reactions, in social reactions it is typically the case that the 'critical number' for one person differs from another's." SCHELLING, MICROMOTIVES, *supra* note 3, at 96. In relation to higher education institutions, Patricia Gurin, who acted as an expert witness in *Gratz* and *Grutter* (the Gurin Report was reprinted in 5 MICH. J. RACE & L. 363 (1999)), makes a similar point:

> There is nothing automatic about the impact of a percentage of minority students on a college campus. Having diverse students on the campus is necessary, but universities also have to make use of structural diversity. Universities have to create educational programs and to foster actual interaction with diverse peers for campus racial diversity to have an impact on students.

Patricia Gurin, *Wood & Sherman: Evidence for the Educational Benefits of Diversity in Higher Education: Response to the Critique by the National Association of Scholars of the Expert Witness Report of Patricia Gurin*, *in* Gratz, et al. v. Bollinger, et al. *and* Grutter v. Bollinger et al., May 30, 2001, at 4-5, *available at* http://www.vpcomm.umich.edu/admissions/research/gurin.html.

[160] As Philip Ball reminds us in another context, "Social physics cannot afford to do away entirely with individual psychology." BALL, *supra* note 14, at 371.

the structure of the system of interaction in which these students are to relate to one another.[161] What may be sufficient as a critical mass in one class or one institution may not be so in another class or another institution.[162] The nature of the entire entering class, the nature of the minority students admitted, the environment or the institutional setup in which interaction is to take place, etc. all affect whether there is a critical mass in a given context to produce the desired public good or to bring about the desired change. To use the image that the Dean of the University of Michigan Law School used, in the same way that the notion of "tall" would be determined contextually, the idea of a critical mass will be specified contextually. What may be tall in a given circumstance may not be considered to be so in another environment. And so is the case with critical mass. Context matters.

Of course, to claim that critical mass is contextual is to refute the argument that the concept is mere shorthand for quota as the dissenters in *Grutter* claimed.[163] It clearly cannot be. If numbers change depending on the nature of the profile of the students admitted and the nature of the interactive process in the given institution, then there cannot be a fixed number. A concept that calls for such a flexible process cannot admit a notion as rigid as a quota.[164] Indeed, admission figures from the University of Michigan School of Law over a thirteen-year period show that to be the case.[165] As an aside, it is also important to remember, as Dean Lehman testified, that critical mass is not the only value but one among many values institutions consider.[166] To think of it

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161 Responding to the charge that the notion of critical mass is disguised quota, the lawyer for the University of Michigan responded to Justice Scalia during the oral argument this way:

> [Critical mass] is not a fixed number. What they [the admission officers] do is, they look—it's responsive to the applicant pool. They look at the applicants, they are looking at a variety of factors on a holistic basis and they find the applicants that they think are going to bring the most in toto to the law school class, but it is not measured against a specific numerical target.

Transcript of Oral Argument at 47, Grutter v. Bollinger, 539 U.S. 306 (2003) (No. 02-241), *available at* http://www.supremecourtus.gov/oral_arguments/argument_transcripts/02-241.pdf.

162 *See* Pamela E. Oliver & Gerald Marwell, *The Paradox of Group Size in Collective Action: A Theory of the Critical Mass. II.*, 53 AM. SOC. REV. 1, 7 (1988); *see also* SCHELLING, MICROMOTIVES, *supra* note 3, at 96 ("Though perhaps not in physical and chemical reactions, in social reactions it is typically the case that the 'critical number' for one person differs from another's.").

163 The Chief Justice refers to the goals articulated by the University of Michigan Law School as a "sham." Grutter v. Bollinger, 539 U.S. 306, 383 (2003).

164 For a judicial observation that the notion of critical mass does not entail quota, see Comfort v. Lynn Sch. Comm., 263 F. Supp. 2d 209, 264 (D. Mass. 2003).

165 Between 1986 and 1999, the percentage of minority students that enrolled in the Law School ranged from 5.4 percent (1998) to 19.2 percent (1994). Grutter v. Bollinger, 137 F. Supp. 2d 821, 842 n.27 (E.D. Mich. 2001).

166 Dean Lehman testified that enrolling a critical mass of minority students is simply one "value in [the] composition of the student body that is important to us pedagogically" but "not the only value." *See* Joint Appendix at 7767-68, Grutter v. Bollinger, 288 F.3d 732 (6th Cir. 2000) (No. 01-1447). This goal, according to Dean Lehman, is balanced against other competing

as one value among several is to refute the claim that critical mass is another name for quota.

Now, there are two jurisprudential problems that are raised by the notion of critical mass as an imperfect or soft analogy. First, how do the courts ensure that this policy is consistent with the constitutional mandate of equal protection? That is, does viewing critical mass in the manner that I have described it essentially write courts out of the role of ensuring that governmental action in this area complies with the constitutional requirement of equal protection? Second, how does one respond to the Chief Justice's observation in *Grutter* that the fact that the Law School admitted different numbers of students for the different minority groups suggested that the notion of critical mass was simply a substitute for proportional representation?

Let me begin with the first question. The initial and rather straightforward response is that the courts will be required to be a lot more deferential to the judgment of educational institutions about how best to assemble student bodies with a critical mass of minority students. This is consistent with the frequent observation by the Court that constitutional doctrines must be flexible enough to accommodate the unique needs of educational institutions.[167] Indeed, to some extent this is the lesson of Justice O'Connor's majority opinion in *Grutter*. O'Connor deferred to "[t]he Law School's educational judgment that . . . diversity is essential to its educational mission" because of "complex educational judgments in an area that lies primarily within the expertise of the university."[168] Determining what the critical mass is in relation to a given class or a given school is clearly a "complex educational judgment" that will depend on many factors, such as the profile of the general student body, the profile of the students that are to constitute the required "meaningful numbers" and the specific structures and process of interaction in existence at the institution. In the same way that "[c]ontext matters when [the Court] review[s] race-based governmental action under the Equal Protection Clause,"[169] context

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objectives such as the admission of a class that is composed of individuals with an exceptionally promising academic potential as well as a group that is diverse on other metrics as in race. *Id.* at 7226, 7251-54.

[167] *See, e.g.*, Bd. of Regents of Univ. of Wis. Sys. v. Southworth, 529 U.S. 217, 231-32 (2000); Regents of Univ. of Michigan v. Ewing, 474 U.S. 214, 225 (1985); Healy v. James, 408 U.S. 169, 171 (1972); Windmar v. Vincent, 454 U.S. 263, 268 (1981).

[168] *Grutter*, 539 U.S. at 328. O'Connor further observed that "'good faith' on the part of the university is 'presumed' absent 'a showing to the contrary.'" *Id.* at 330 (quoting Regents of the Univ. of California v. Bakke, 438 U.S. 265, 319 (1978)); *see also* Smith v. Univ. of Wash. Law School, 392 F.3d 367, 379 (9th Cir. 2004) ("*Grutter* explicitly refrained from setting a cap on what could constitute a critical mass and we defer to the Law School's educational decision to award a racial or ethnic plus to Asian Americans in order to enroll a sufficiently large diverse group of Americans.").

[169] Grutter v. Bollinger, 539 U.S. 306, 327 (2003).

matters deeply in determining whether or when a critical mass has been achieved.

It is very hard not to think that after O'Connor's majority opinion in *Grutter*, the standard of review for cases involving an educational admission process that takes race into account in a non-invidious way will be evaluated by a more deferential standard than by the strict scrutiny standard that the Court has adopted in the last few years. Although Justice O'Connor claims that the scrutiny of the interest asserted by the University of Michigan School of Law "is no less strict,"[170] the Court's holding in *Grutter* shows a great deal of deference to the university's judgment, and in my view rightly so.

But even though the courts should or would defer, that deference is presumptive, not conclusive. The courts will still have a role, albeit deferential, to examine, if need be, whether the action or policy of an educational institution is consistent with constitutional mandate. What factors should the courts look at to see whether the asserted critical mass rationale does not deserve deference? They should look to see whether or not those who are supposed to form the critical mass are students from historically underrepresented and discriminated against groups; whether race was taken as one of many factors in the process of each student competing with other students; and whether there are factors that indicate that the decision makers are predisposed to engage in invidious discrimination. The requirement that courts look at the nature of the beneficiaries of affirmative action and the predisposition of the decision makers to engage in invidious discrimination is to make the obvious point that was central to the Court's opinion in *Korematsu*[171] that what triggers strict scrutiny is not the use of race *per se* in the allotment of benefits or in the imposition of burdens, but rather the fact that the distribution of such benefits or burdens is based on the desire to engage in invidious discrimination against a racial and historically unpopular minority.[172]

And perhaps more importantly for our purpose here, the courts ought to withdraw the presumption of validity of a decision that is made on the basis of the notion of critical mass if the decision does not roughly correlate to what the empirical evidence shows is often the

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[170] *Id.* at 328 ("Our scrutiny of the interest asserted by the Law School is no less strict for taking into account complex educational judgments in an area that lies primarily within the expertise of the university.").

[171] Korematsu v. United States, 323 U.S. 214 (1944). *Korematsu* is generally regarded as having formulated the first standard by which racial classifications were to be evaluated.

[172] It is true that the answer that the Court gave in *Korematsu* as to whether the action of the government was in fact motivated by racial animus was generally regarded as having been wrong. But the Court's formulation of the question that only invidious discrimination against a racial minority will trigger strict scrutiny seems to me to be correct, although the more recent decisions of the Court have departed from that view.

point of criticality that is capable of triggering social change. Put simply, decision makers have to work in the context of an analogy, though imperfect and flexible it may be. Empirical evidence shows that in some social and political activities criticality is reached between fifteen and thirty percent.[173]

Now, in relation to minorities and women, the percentage range might relate to the nature of the transformation that is desired. The variation in the range may not only be due to the nature and character of the actors and the institution of interaction,[174] as I noted earlier, but also because the goals (the public goods) for which the particular critical mass is desired may have been different. Thus, for example, in relation to minorities in higher education institutions, the lower part of the threshold may be sufficient to encourage them to participate in the educational process, to speak out on issues that matter to them and their respective groups. This is what I have referred to as the *voice threshold*. It is interesting to note that during the *Grutter* trial the chairman of the faculty committee that drafted the 1992 Michigan Law School's admissions policy indicated that the draft of the policy had indicated that critical mass for their purpose was in the range between eleven and seventeen percent.[175] That statement was apparently dropped when it was suggested that it be removed.[176] It seems to me that the range that

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173 *See, e.g.*, K. Staudt, *Women in Politics: Mexico in Global Perspectives*, *in* WOMEN'S PARTICIPATION IN MEXICAN POLITICAL LIFE 38 (V.E. Rodriguez ed., 1996) ("First 'critical mass' numbers of women are fundamental to transforming policies and politics . . . . In successful countries, 15 percent female representation in cabinets and national and local councils has been a turning point. Thirty percent representation is a common goal, quota, and sociological turning point in studies of organization."). The threshold for accelerating further increase of women in legislatures was set by the United Nations at 30% in 1995. *See* Dahlerup, *supra* note 70, at 276 ("The idea of a critical mass is most often applied to situations when women constitute less than 30 percent, in this way explaining why the entrance of women into politics has not made more difference—yet."); Henry Etzkowitz, Carol Kemelgor, Michael Neuschatz, Brian Uzzi & Joseph Alonzo, *The Paradox of Critical Mass for Women in Science*, 266 SCIENCE 51 (1994) ("The discrete point at which the presence of a sufficient number brings about qualitative improvement in conditions and accelerates the dynamics of change is known as 'critical mass' and has been defined as a strong minority of at least 15%."). The critical mass for historically underrepresented or excluded minorities in educational institutions has been cited to be in the same range. Thus, for example, the district court in *Comfort v. Lynn School Committee*, 263 F. Supp.2d 209, 237 (2003), cites studies "describing a 20% figure below which members of a racial minority in a given setting feel isolated or stigmatized." The court also cites an expert witness who observed "a critical mass estimate of 20%—a number well-established in the literature and affirmed in his own research as a prerequisite to making a meaningful amount of intergroup contact possible." *Id.*

174 For example, in relation to women in parliament the strength of the women members, the parliamentary procedures, the number of politically progressive men in the parliament will affect the threshold level.

175 *See* Grutter v. Bollinger, 137 F. Supp. 2d, 821, 835 (2001). Candor is always the first important step to making one's case. In that regard one wishes that the drafters included the range and argued for it.

176 Professor Richard Lempert, the professor who chaired the committee that drafted the 1992 admissions policy "testified that the '11% to 17%' figure, which is the range he believes

was contained in the draft is consistent with voice threshold.[177] Indeed, one of the objectives by which the University of Michigan School of Law justified the admission of a critical mass of minority students was so that those students would not feel isolated and would be encouraged to take active part in the life of the institution.

As important as voice is, it is even more important that the voice be genuinely one's own. And for minorities, the comfort level to engage in that distinctive voice may require a higher threshold than the threshold sufficient for voice. This is what I have referred to as *perspective threshold*.[178] To be an active participant in a class may not necessarily mean that one is comfortable to speak in one's own distinct voice and to advocate issues and concerns that are important to one. It is not unreasonable to assume that the threshold for that is higher. The critical mass for the transformation of the culture of the institution would be at the higher end of the range. This is what may be referred to as *culture threshold*.[179] So, the range of percentages that the empirical evidence shows may partly be a function of the various levels of transformation to which the threshold is attached. I, of course, do not mean to suggest that these three exhaust the range of thresholds or the levels of transformations, but to merely suggest that critical mass even in a specific area may vary depending on the goals sought to be achieved. While there is one and only one goal (sustainable explosion) for which critical mass in the scientific area can be employed, there are various levels of transformation (and changes) for which there is a need of a critical mass. This is another aspect of the idea of imperfect analogy.

Now, given the discussion in the last paragraph, one may ask the following: "If *culture threshold* is ultimately what is required for a relatively sudden transformation of institutions, then why not go for that? And alternatively, why bother with other thresholds (critical masses) if they do not lead to that sudden transformation?" The answer to the first question is that there may not be a sufficient number of individuals in the particular category who are both interested in the institution and meet the specific minimum requirements of the

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constitutes critical mass, was omitted from the final version of the admissions policy because percentages were too rigid and could be misconstrued as a quota." *Id*.

177 "Reaching around 15% [women] representation in a political body allows a voice." Grey, *supra* note 2, at 29.

178 K. Dolan & L. Ford, *Are All Women State Legislators Alike?*, *in* WOMEN AND ELECTIVE OFFICE: PAST, PRESENT, AND FUTURE 77 (Sue Thomas & Clyde Wilcox eds., 1998) ("There is a variety of evidence to support the 'critical mass' thesis—that women act more distinctively once their numbers reach a certain threshold.").

179 In terms of women managers, one study showed that "[a]s their proportion reaches 20%, women benefit from significantly more positive evaluations of their status and contribution to organizational culture, by women and men alike." Lortie-Lussier & Rinfret, *supra* note 1, at 1986.

institution. Changing the requirement is an option,[180] of course, but that is a different issue that I do not wish to pursue here. As to the second question, although the lower thresholds may not lead to sudden social change, they are likely to lead to changes over time. Voice and perspective thresholds over time are likely to affect the culture of the particular institution. One perhaps could make a distinction here between the irreversible process of change and an accelerated rate of change; while the voice and perspective thresholds may start the former, culture thresholds are about the latter.

As to the issue of disparity in the number of students from underrepresented minority groups who were admitted under the theory of critical mass, the Chief Justice had reason to be suspicious about the validity of having different critical masses for the different groups. How can it be that the critical mass for African Americans is different from that for Hispanic Americans or for American Indians? Is the notion of critical mass simply being used as a code word for racial balancing (or for aesthetic purposes, as Justice Thomas would say), reflecting the proportion of the various groups in the applicants' pool?

I think the Chief Justice is correct that there is some correlation between the number of students accepted from these groups and their proportion in the pool of applicants. But I shall argue that it does not follow from this that the notion of critical mass is, therefore, a sham or a code word for racial balancing. This is so for three reasons. First, it does not seem to me to be unreasonable to think that statistically the number of qualified applicants from underrepresented minority groups will correlate to their number in the applicants' pool. Second, if my argument about the context-dependent nature of critical mass in the realm of the physics of society is correct, then it should not be surprising for the institution to think that given the different historical circumstances under which the various groups suffered exclusions and discrimination, the different grounds for their exclusion (some were—and still are in some quarters—thought not to have "the necessities"[181]

[180] That is what Justices Scalia and Thomas suggested to the University of Michigan School of Law, incidentally not so much because they thought that the option was educationally or socially sensible, but rather as a way to indicate how affirmative action is destroying merit. Grutter v. Bollinger, 539 U.S. 306, 347, 357-62 (2003).

[181] The phrase is taken from a statement of Al Companis who was the vice-president for the Los Angles Dodgers baseball team when he made the statement. The statement led to his dismissal from the ballclub. The occasion was the fortieth anniversary of the first African American to play major league baseball, Jackie Robinson, and the venue was ABC's *Nightline* program. Ted Koppel, the program's host, spoke to Companis, who knew Robinson and was a Dodger executive when Robinson broke the color line. Here is how the exchange went:

> Koppel: Why are there no black managers, general managers, or owners? Is there still that much prejudice in baseball today?
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> Companis: No. I don't believe it's prejudice. I truly believe [African Americans] may not have some of *the necessities* to be, let's say, a field manager or perhaps a general manager.

to engage in intellectual activities) as well as the current condition in which they find themselves, the thresholds will be different for the various groups at all three levels of criticality. Third, and paradoxically, one could also view the relevant critical mass at an intergroup level. This is not to deny that there may be different levels of critical mass for the different groups, given the different histories and modes and reasons of exclusion. The claim here is that there is a commonality among members of these groups in that their relationship with the majority has been one of exclusion, domination, and devaluation. Given that, it may be that the voice of one minority narrating its conditions is likely to encourage other minorities to narrate their stories and conditions as well. The presence of people with roughly similar experiences in the social and political world, though from different racial or ethnic groups and with specific histories and narratives, may provide encouragement and support to each other to voice their views and to relate the possible social and political consequences of this or that rule on this or that community. Put simply, at one level the notion of critical mass may be usefully thought of in the aggregate sense.

## V. CRITICAL MASS AND THE PARADOX OF COLLECTIVE ACTION

The notion of critical mass implies the idea of collectivity, the idea that people will act in a particular way because others have acted in that same way. Or that the immunity of numbers will incline people to act or behave in a certain way. Whether one sees criticality in terms of voice, perspectives, or institutional culture change, it assumes that individuals will act as members of this or that group to produce this or that public good.

In relation to affirmative action, the need for the admission of a critical mass of students from underrepresented groups is partly premised on the identity of perspectives or interests among the various members of minority groups. Indeed, Justice O'Connor in her majority opinion in *Grutter* seems to imply that when she observed: "Just as growing up in a particular region or having particular professional

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> Koppel: Do you really believe that?
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> Companis: Well, I don't say that all of them, but they certainly are short. How many quarterbacks do you have, how many pitchers do you have that are black?
>
> Koppel: Yeah, but I got to tell you, that sounds like the same garbage we were hearing forty years ago about players.
>
> Companis: No, it is not garbage . . . So it might just be, why are black men or black people not good swimmers? Because they don't have the buoyancy.

*See Nightline* (ABC television broadcast, Apr. 6, 1987), *cited in* Adeno Addis, *'Hell Man, They Did Invent Us': The Mass Media, Law, and African Americans*, 41 BUFFALO L. REV. 523, 524 (1993).

experiences is likely to affect an individual's views, so too is one's own, unique experience of being a racial minority in a society, like our own, in which race unfortunately still matters."[182] The theory assumes that the perspectives of being a member of a minority group, say black, in the United States (or being a woman) will incline one to view issues and activities in a particular way. This is hardly contestable. Race matters and matters greatly in the United States. Americans are highly segregated and profoundly affected by race. While white Americans do not have to confront their race daily, for even the well-to-do and highly educated members of racial minorities such as blacks and Hispanics, the story is quite different.[183] Thus, for example, both blacks and whites may agree that crime is a serious problem, but given their different experiences with law enforcement personnel and institutions, they are likely to have different perspectives about methods of combating it. Hispanics, like other Americans, may have serious concerns about illegal immigration, but their methods of dealing with the issue may be different.[184]

But, as I noted earlier, paradoxically, in relation to race, the notion

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[182] *Grutter*, 539 U.S. at 333.

[183] "African-Americans and Hispanics alter their driving habits in ways that would never occur to most white Americans [so as to avoid police harassment] . . . . or intentionally drive only bland cars or change the way they dress." H.R. REP. NO. 106-517, at 3-4 (2000). Black men are overcharged for automobiles to the tune of almost twice as much as white men are. *See* Ian Ayres & Peter Siegelman, *Race and Gender Discrimination in Bargaining for a New Car*, 85 AM. ECON. REV. 304, 313 (1995). In a city-commissioned study in New Orleans in 2004, it was found that many French Quarter establishments charged blacks significantly more than white customers for the same drinks and imposed dress and other codes on them that were apparently not required from white customers. *See* James Varney, *Bourbon Street Bar Bias Detailed: Black Customers in Test Were Overcharged, Hassled*, TIMES-PICAYUNE, May 17, 2005, at National 1. Stories of blacks being told that there are no rental places just to see those places magically appearing for a white applicant are legendary. *See, e.g.*, Lynne Jensen, *Landlord Was Not Colorblind, Jury Rules; Discrimination Case Could Net $100,000*, TIMES-PICAYUNE, March 7, 2002, at Metro 1. Racial exclusions and slights are not limited to poor blacks and Hispanics. Many prominent blacks, for example, report the many times that taxi cabs refused to stop for them while stopping for a white individual a few feet away. The famous historian John Hope Franklin reported that on more than one occasion he had been approached in hotel lobbies or private clubs by a white person "who asked him to fetch her coat or car." Appendix to Petition for Writ of Certiorari at 267a, Grutter v. Bollinger, 539 U.S. 306 (2003) (No. 02-241). Justice Thurgood Marshall is said to have been mistaken on at least one occasion in the Supreme Court building for an elevator operator by white riders who asked him to take them to a particular destination in the building; apparently he obliged. The Dean of the School of Education at the University of California in Berkeley, who is Hispanic, testified in *Grutter* that a neighbor had approached him while he was cutting the grass on his front lawn to ask him what he charged for yard work. *See* Joint Appendix at 8472, Grutter v. Bollinger, 288 F.3d 732 (6th Cir. 2000) (No. 01-1447).

[184] The same thing could be said about men and women. *See* Joni Lovenduski, *Women and Politics: Minority Representation or Critical Mass?*, 54 PARLIAMENTARY AFFAIRS 743, 745 (2001) ("Whilst opinion and attitude data suggest that men and women agree that the same issues are significant, women perceive those issues differently to men. For example, both women and men agree that employment issues are important. However, many surveys have shown that women are more likely to be concerned about work and family life whilst men are more likely to be concerned about pay, career prospects and benefits.").

of critical mass is also meant to ensure that individual perspectives and judgments are cultivated. Citing to, and approving of, the position of the University of Michigan, Justice O'Connor observes in *Grutter* that the idea of critical mass is not premised on the notion that "'minority students always (or even consistently) express some characteristic minority viewpoint on any issue.' To the contrary, diminishing the force of such stereotypes is both a crucial part of the Law School's mission, and one that it cannot accomplish with only token numbers of minority students."[185] Justice O'Connor's observation captures the paradox nicely. On the one hand, critical mass assumes identity of interest by virtue of group membership ("unique experience of being a racial minority"). On the other hand, the idea of critical mass is premised on the existence of diversity of views and interests among members of minority groups and is designed to undermine the prevalent stereotype among nonminority members of the relevant community that there is an identity of views and interests among members of minority groups such as blacks.[186]

How does one resolve this paradox? How can one believe that race (or ethnicity) colors one's outlook in life[187] and that a sufficient number of students from underrepresented groups will make it possible for that perspective to get its full airing in the classroom and at the school generally, while also maintaining that the goal of admitting a critical mass of minority students is partly to undermine the stereotype that members of racial minorities think alike?[188] One way to resolve the paradox is to argue that the very critical mass that will propel members

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[185] Grutter v. Bollinger, 539 U.S. 306, 333 (2003).

[186] The majority makes this point by citing to the testimony of Dean Kent Syverud, then the Dan of Vanderbilt Law School and previously a professor at the University of Michigan Law School, that "when a critical mass of underrepresented minority students is present, racial stereotypes lose their force because nonminority students learn there is no 'minority viewpoint' but rather a variety of viewpoints among minority students." *Id.* at 319-20.

[187] By "race coloring one's outlook," I do not of course mean that the simple fact of being of a certain color inclines one to think in a particular way. That plainly is incorrect and the Supreme Court has condemned the fiction that race determines a person's "belief and behavior." *See* Metro Broad. v. FCC, 497 U.S. 547, 618 (1990) (O'Connor, J., dissenting); United States v. Virginia, 518 U.S. 515, 517 (1996). Rather, the claim is that the reality in the United States is that one's race substantially affects one's life experience. *See* J.E.B. v. Alabama *ex rel.* T.B., 511 U.S. 127, 148-49 (1994) (O'Connor, J., concurring). Diversity on this account is not pigment but experiential diversity.

[188] The stereotype that minorities think alike is what the noted psychologist and social theorist, Albert Memmi, once called "the mark of the plural," an effective way of devaluing members of a group by depersonalizing them. ALBERT MEMMI, THE COLONIZER AND THE COLONIZED 85 (Howard Greenfield trans., 1965). For Memmi, members of subordinated groups (Memmi's specific concern was colonized peoples) are depersonalized by being continually characterized as members of an "anonymous collectivity" rather than as individuals. As he put it: "Another sign of the colonized's depersonalization is what one might call the mark of the plural. The colonized is never characterized in an individual manner; he is entitled to drown in an anonymous collectivity ('They are this.' 'They are all the same.')." *Id.*

of a racial or an ethnic group to act or feel in a particular way in the long run will free them to act as individuals rather than as members of racial or ethnic groups. This would be so for two reasons. First, the presence of a "meaningful number" (critical mass) will liberate at least some members of minority groups from feeling that they need to represent and speak on behalf of the racial or ethnic group of which they are members. That is, while the presence of a critical mass of, say, black students will ensure that the perspective of being black in the United States will get an airing, that very presence will also liberate some of those minority students to present a variety of views and perspectives as to the condition of black America and the reasons for that condition. Critical mass has an emboldening impact in both directions.

Second, the hope is that in the long run the effect of a critical mass of students from underrepresented groups (and their active participation in institutional life) is likely to be that issues relating to minorities will be viewed as an ordinary part of the conversation, capable of being raised by nonminority and minority students alike. The point here is that critical mass is about the transformation of social norms as it is about the idea of the success or failure of social activities. Put simply, the presence of a critical mass of minority students may cause the shift in social norms within the institutions that they attend, making it easier for the issues to be considered as issues for all students rather than for minority students alone. This will make it possible for minority students to act as individuals rather than as members of a group needing to push the interests of the group.

## VI. CRITICAL MASS, SOCIAL NORMS, AND SOCIAL MOVEMENTS

Thus far we have been exploring how the notion of critical mass is related to the idea of the success or failure of social activities. We have seen how the behavior of actors often depends on their expectation of how others would act in a given circumstance. A social activity is tipped-out if enough actors sign-off the activity and it is tipped-in if enough actors sign-on. But we have also said that the consequence of the phenomenon of critical mass and tipping is that the action and behavior of a small number of actors may be able to affect the success or failure of a particular activity. The question that I wish to explore briefly in this section is whether what is true for social activities is also true for social norms and social movements. The short answer seems to be: "Of course, it is." By social norms I mean to refer to rules or practices that participants in a particular enterprise or institution adhere to or engage in even though those rules or practices are not legally

required or required by the formal regulations of the particular organization or institution.[189]

A great deal of our relationships and interactions with others are conducted within the realm of social norms, whether those interactions are individual or institutional, whether the action is at a macro or micro level. Those norms sometimes shift or change and they do so because "enough actors change their behavior that a tipping-point is crossed."[190] A university is not just a rule-governed institution. True, universities are full of rules—rules about hiring and promoting faculty and staff, rules governing faculty and student behavior, rules about the relationship between the central administration and constituent units, and the like—that set the parameter of permissible and impermissible behavior and set up a structure of governance within the community. But just like other communities, university communities are also governed by social norms, norms that signal expected behavior and that are self-reinforcing in the sense that "everyone wants to play their part given the expectation that others will play theirs."[191] More than most institutions, universities are creatures of culture and social norms.

Just like social norms in any other area, in the university context, social norms shift (are tipped-in or tipped-out) when enough people act in a particular way. In relation to the admission of minority students to higher education institutions, the argument is that the presence of a critical mass of such students may cause the shift in social norms within the institutions that they attend. The shift in social norms may occur at various levels of encounters, from classroom dynamics to the relationship among students outside the classroom context, to the relationship between the administration and other members of the university community. This is what I referred to earlier as *culture threshold*.

How would that happen? The shift may occur for a number of reasons. A tipping point may be reached because a critical mass of minority students may persuade enough of the general student body about the desirability of adhering to a social norm with certain racial implications. Rather than responding in the way a token is likely to—isolating himself or alternatively defining himself as an insider by presenting himself as an exception to his social category—a critical mass of minority students may embolden members to challenge and

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[189] S*ee* Eisenberg, *Corporate Law and Social Norms*, *supra* note 9, at 1257; *see also* H. Peyton Young, *The Power of Norms, in* GENETIC AND CULTURAL EVOLUTION OF COOPERATION 389 (Peter Hammerstein ed., 2003) ("A *norm* is a rule of behavior that is self-reinforcing: everyone wants to play their part given the expectation that others will play theirs."); Martha Finnemore & Kathryn Sikkink, *International Norm Dynamics and Political Change*, 52 INT'L ORG. 887, 891 (1998).

[190] *See* Eisenberg, *Corporate Law and Social Norms*, *supra* note 9, at 1264.

[191] *See* Young, *supra* note 189, at 389.

attempt to persuade the general student body to develop a new shared intergroup culture. At other times, a norm may change because enough actors are prepared to engage in social sanctions against those who do not wish to change the social practice, and then enough actors may change as a result of the social stigma attached to adhering to a widely challenged social norm. Here what you have is critical mass at work on two levels: a critical mass of minority students causing a shift on some nonminority students (or faculty and administrators), and then a critical mass of minority and nonminority students together causing a shift sufficient to alter the social norm. However the change comes about, it seems reasonable to assume that a critical mass of historically underrepresented minority students may contribute to the change of social norms and hence a change in the culture of institutional assumptions and practices. Critical mass here is norm-shaping. That is as important as what substantive issues are raised and discussed. Indeed, Christine Jolls and Cass Sunstein report that a "significant body of social science evidence supports the conclusion that the presence of population diversity in an environment tends to reduce the level of implicit [or unconscious] bias."[192] The argument of this article has been that you need a certain threshold of out-groups to bring about a shift where such reduction is possible.

Of course, a social norm may be transformed into a legal norm or, in the university context, into a rule, through the normal processes of enactment or rule-making.[193] Now, the question of whether the level of criticality that is required for the emergence or change of a social norm is similar to that required for the transformation of a social norm into a legal norm is an interesting question which I shall not pursue here, but may be worth pursuing.[194]

As to the role of critical mass in the emergence of social

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[192] Christine Jolls & Cass Sunstein, *The Law of Implicit Bias*, 94 CAL. L. REV. 969, 981 (2006).

[193] A social norm can be transformed into a legal norm in a number of ways—legislatively, by judicial affirmation (common law) or even by an executive action. In the international realm the actors themselves, those whose behavior is to be regulated, may through their consistent acts over a period of time transform a social and political norm into a legal norm. An example is what is referred to as international customary law which is regarded as one of the sources of international law. *See* 1998 I.C.J. Acts & Docs. art. 38, *available at* http://www.yale.edu/lawweb/avalon/decade/decad026.htm#1. Social and political norms regulating the behavior of states and other international actors are said to evolve over time into legally binding rules if those social and political norms manifest general and consistent state practice adhering to those norms and if that adherence is a result of a sense of legal obligation (*opinio juris*) on the side of the relevant (state) actors.

[194] The issue of how social or political norms transform themselves into legal norms and whether the level of criticality (threshold) is the same for the transformation of social norms into legal norms as it is for the emergence or death of social norms is an issue that I explore in another article with a special focus on what is referred to as customary international law. Adeno Addis, *Critical Mass and the Emergence of International Customary Norms* (forthcoming).

movements, it is a vast topic that needs to be investigated on its own. Here I shall only note a couple of points to indicate how critical mass may relate to the emergence and demise of social movements. First, in the same way that whether a faculty seminar continues or dies depends on whether each participant expects that enough other participants will continue to attend,[195] whether minority students (or women) will start (or continue) a movement to transform practices of the institution (such as norms) that are not viewed as just or fair will depend on their expectation that enough other minority (or women) students will be there to sustain it. And that expectation will in turn depend on how many other students from those groups attend the particular institution. Put simply, the existence of a critical mass of minority students will make it possible for the emergence of a social norm and social practice that will be self-sustaining. Second, before minority students can present their views (such as the promotion of a social norm) for adoption or for acceptance ("cascading," as Cass Sunstein[196] would call it) by the general community of the particular institution, they may need to engage in what may be referred to as enclave deliberation, deliberation within the group to work out positions and develop norms more clearly.[197] The success of enclave deliberations (and the emergence of a social norm) will depend on the presence of a critical mass of minority students. The presence of a critical mass of students at the point of admission will make it likely that there will be a critical mass of minority students at the point of enclave deliberation and the emergence and cascading of social norms.[198] Put simply, critical mass is as much about the emergence and sustenance of social norms and social movements as it is about the tipping-out or tipping-in of social behavior.

However, in the same way that a social norm may be transformed into a legal norm, a social movement may end up defining itself in legal terms. In fact, some have argued that law is, and should be, a critical player in the creation and sustenance of social movements,[199] while others maintain that "social movements and juridical law are fundamentally in tension."[200] I need not join that debate here. For my

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[195] *See* SCHELLING, MICROMOTIVES, *supra* note 3, at 91-92.

[196] *See* SUNSTEIN, *supra* note 144. For a description of cascades, see also Murat Somer, *Cascades of Ethnic Polarization: Lessons from Yugoslavia*, 573 ANNALS AM. ACAD. POL. & SOC. SCI. 127, 129 (2001) ("Cascades are self-reinforcing processes that change the behavior of a group of people through interpersonal dependencies.").

[197] *See* NANCY FRASER, JUSTICE INTERRUPTUS: CRITICAL REFLECTIONS ON THE "POSTSOCIALIST" CONDITION 69-98 (1997).

[198] For a description of the life-cycle of social norms see Finnemore & Sikkink, *supra* note 189, at 895. Finnemore and Sikkink view the life-cycle of norms in terms of three stages: norm emergence, norm cascading, and norm internalization.

[199] *See* Brown-Nagin, *supra* note 72, at 1442 (referring to the work of William Eskrdige).

[200] *Id.* Brown-Nagin argues that the risk of social movements defining themselves through

purpose, it is sufficient to note that whether they ultimately constitute themselves legally or not, the emergence of social movements is subject to the same logic of critical mass as are social behavior and social norms.

## CONCLUSION

Two purposes have animated and organized this article. First, my aim was to defend a version of critical mass that I believe is conceptually sensible and consistent with constitutional requirements. But this is part of a larger, second purpose which was to sort out the various meanings that the phrase "critical mass" has been required to carry in legal discourse and to assess whether those meanings are conceptually coherent and/or jurisprudentially sound. The notion of critical mass is more often invoked than analyzed. Even a casual observer will realize that the phrase's popularity is inversely related to its clarity. What I have attempted to do in this Article is, therefore, to start the conversation about the need for a systematic and sustained inquiry into the concept which now appears to have become central in the jurisprudence of affirmative action specifically and the process of social change generally.[201] Indeed, the notion of critical mass has become crucially important in the study of all aspects of collective action.

This Article argues that the appropriation of the phrase in the social, political and legal domains cannot be understood in metaphoric terms. The only conceptually coherent way is to view it as an analogy to the way the phrase is used in the scientific realm where it originated. Just as a certain threshold of uranium or plutonium is needed for a self-sustaining explosion, a threshold of actors will be needed for the tipping-in or tipping-out of social activities and social norms in educational institutions. Just as it is the interaction among neutrons that leads to atomic explosion, whether or not a public good is produced or a

law is that they "risk undermining their insurgent role in the political process, thus losing their agenda-setting ability." *Id.* at 1443.

[201] I must note here, however, that a number of states, including Michigan and California have adopted propositions or referenda prohibiting affirmative action in public colleges and universities. The issue is apparently getting traction in many other states and Ward Connerly, "the black California businessman behind such initiatives in California and Michigan, is planning a kind of Super Tuesday next fall, with ballot initiatives against racial preferences in several states." Tamar Lewin, *Colleges Regroup After Voters Ban Race Preferences*, N.Y. TIMES, Jan. 2007, at A1. Although this process clearly removes the issue from the courts and lodges it in the political domain (where in my view it belongs), it does not undermine the argument made in the article. It simply shifts the analysis of, and the conversation on, the notion of critical mass to the political process. The centrality of critical mass to collective action would not be diminished because the issue is before the political branches of the government rather than before the courts.

social norm is tipped-in or tipped-out will depend on what individuals see others doing or expect others will do. In the political realm, that collective action manifests itself in the form of what has been referred to as "the politics of presence."[202]

But unlike in the physical world, the idea of critical mass in the social world cannot afford to do away entirely with individual psychology. Criticality will depend on the nature of the actors and the structure of interaction.[203] I have argued that, therefore, the best way to conceive of critical mass in the social world, including in the affirmative action area, is in terms of what I have referred to as imperfect or soft analogy.

What makes the analogy imperfect is its context-sensitive nature. Thus, for example, in relation to affirmative action, the size and nature of the entire entering class, the institutional framework within which students are meant to interact, the nature of the group that is supposed to constitute the "meaningful number," as well as the nature of the public good that is to be produced or achieved by the admission of members of minority groups will all play a role in defining what the critical mass will be in a given circumstance. But to embrace the idea of an imperfect analogy is not to make the claim, as some have done, that critical mass in the social world cannot, therefore, be empirically verified. Indeed, the article has argued that there is in fact a body of social science evidence that tends to show that when a certain threshold (critical mass) is reached there is a tip-in or tip-out of social norms and social behavior. But unlike in the scientific world, the threshold here is expressed in terms of ranges. The difference in the range or the level of threshold may be related not only to the character of the actors, the nature of the group, and the institutional setup of the interaction, but also to the nature of the transformation that is desired, and how irreversible and accelerated the changes are to be.

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[202] *See supra* note 69 and accompanying text.

[203] "We have to take onboard the factor that represents probably the most egregious omission of conventional neoclassical theory, and that brings us most firmly into the realm of statistical physics. That factor is *interaction*." BALL, *supra* note 14, at 214.