The Political Economy of Collective Action and Radical Reform: A Proposed Conceptual Framework

Presented at the Institute for New Economic Thinking Seminar
Martin School, Oxford University
8 June 2016

Revised 19 January 2017

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ABSTRACT

Radical reform displaces social equilibria. It reorients key institutions and underlying mechanisms of coordination and enforcement. This paper presents a broad framework for analyzing radical reform in terms of a large set of collective-action problems faced by potential reformers. It merges concepts that often appear separately in the literature, including social preferences, power relationships, policy subsystems, institutional stability, types of institutional change, and types of agents. Relatively simple game-theoretic models offer a platform for depicting key interactions. Over time, these interactions follow a punctuated-equilibrium dynamic, within which incremental reforms sometimes sow the seeds for punctuation via radical reform. Punctuation unfolds as an information cascade of rapidly shifting perceptions and activity within a social network. Ultimately, this paper offers conceptual foundations for examining how activists occasionally succeed in instigating or facilitating radical reform—and why they so often fail. This framework can then spawn a host of more targeted models and multiple empirical hypotheses.

I thank Peter Hall, Robert Hancke, and Tim Werner for helpful comments on a previous draft of this paper. I thank the Department of Economics at the University College London for the use of an office and for technical support, and Frank Witte for arranging such support. I thank Grinnell College and especially the Dean's office for financial assistance with this project.

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Introduction

Radical reform displaces previously established political, economic, and social equilibria. It reorients key institutions along with associated mechanisms of coordination and enforcement. This paper proposes foundations for a conceptual framework that can address such phenomena, primarily from the point of view of potential radical reformers (hereafter activists).

Activists, face daunting collective-action problems (CAPs) related to motivating substantive reform activity across participants whose interests and perceptions of social environments differ. *Collective-Action Problems* (CAPs) arise when the pursuit of individual self-interest leads to socially undesirable outcomes for some group.[1] There are two basic categories: First-order CAPs involve multiple manifestations of free-riding and inter or intra-group conflict. In economic terms, first-order CAPs concern provision of public goods, promotion of positive externalities, reduction of negative externalities, and limiting use of common resources—all broadly defined. Examples range from limiting global or regional carbon emissions to reducing crime, financing parks, limiting catches in fisheries, and arranging for coffee or snacks at meetings. Resolution of first-order CAPs requires negotiating arrangements for distributing associated costs (time, effort, risks, money) and benefits. Honoring agreements, however, is often costly. Second-order CAPs then involve arranging the requisite coordination and enforcement for rendering agreements to resolve first-order CAPs credible, and hence implementable.[2] Resolution of second-order CAPs frequently involves exercising power and the creation, modification, and interpretation of both informal and formal institutions.

Activists confront both types of CAPs. They must address first-order CAPs of individual

[1] Self-interest can reflect material preferences; it may also incorporate social preferences (e.g., status).
[2] See Ostrom (1990) on institutional design as a second-order CAP. See Ferguson (2013) on first- and second-order CAPs as they relate to both the micro foundations of exchange and macro-level prospects for development.

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and group free-riding on the efforts, expenses, and risks undertaken by others and, simultaneously, navigate potentially destructive conflicts among multiple participants whose interests and perceptions often differ. Relevant second-order CAPs involve coordinating myriad activities, enforcing commitments to participate and, simultaneously, creating expectations that coordination and enforcement will, in fact, ensue. Additionally, activists typically face entrenched opposition and myriad unanticipated events.

Background Concepts

Several related concepts inform this analysis: institutions, organizations, and institutional systems; punctuated equilibria; typical reform, and radical reform. A synopsis of their interrelations offers an image of the daunting CAPs of radical reform.

Radical reform transforms institutions. Simply put, institutions are the "rules of the game in a society" (North 1990, 3). More specifically, an *institution* is a combination of mutually understood beliefs, decision rules, conventions, social norms, and/or formal rules that specify or prescribe expected, appropriate and/or inappropriate behavior for specific types of individuals or groups in relevant social contexts. Institutions offer resources to specific actors that can facilitate resolving CAPs (Hall and Thelen 2009).[3] There are two basic types of institutions: formal and informal. *Formal institutions* arise from specified collective decision-making processes and are typically, though not always, written. Examples include constitutions, legislation, and formally decided government or corporate rules, such as personnel policies. By contrast, *informal institutions* are conventions, social norms, or other informal behavioral patterns that emerge more or less spontaneously from histories of repeated social interactions and informal decision

[3] Mahoney and Thelen (2009) citing Hall (1986), Skocpol (1995) and Mahoney (2010) state that institutions are "distributional instruments laden with power implications (8)."

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procedures.[4] Both types of institutions operate simultaneously at multiple, often nested, levels. For example, effective regulations exist in various contexts of authorizing legislation and norms that establish at least minimal legitimacy for the involved agencies. Likewise, a specific normative prescription for sharing (e.g., 50/50) may operate in the context of a broader norm of reciprocity.

Institutional rules and procedures provide contexts (rules of the game) within which organizations and individuals act (as players). *Organizations* are somewhat fluid groupings of boundedly rational individuals, often with somewhat varied interests, who more or less jointly pursue sets of negotiated goals by using evolving decision rules to interpret and coordinate key operations (Cyert and March 1963).[5] Organizations implement rules. More fundamentally, they create and transform institutions.

Institutional systems combine informal institutions, formal institutions, and organizations in complementary and reinforcing manners. *Institutional systems* are relatively stable, often complex, configurations of institutions and organizations that actually generate the social regularities that institutions prescribe. For example, formal institutions (laws) prescribe that shoppers shall not take store merchandise without first paying. The social outcome of very low levels of actual shoplifting (in areas with an established a rule of law), however, follows from the complementary presence of informal institutions (social norms that condemn theft) and shared expectations of enforcement from complementary organizations (police departments and

[4] *Social norms* are expected behavioral prescriptions with ethical content and unspecified but generally understood social enforcement. Examples include norms against cutting in line or favoring contributing to charities.

[5] This institution/organization distinction follows Bowles, Ostrom, North, and others. Complex governing or corporate bodies exhibit both dimensions. As an organization, General Motors makes cars and lobbies Congress; as an institution, GM embodies rules concerning personnel policies, sales procedures, pay levels, etc.

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courts).[6] Institutions prescribe resolutions to first-order CAPs; complementary organizations resolve second-order CAPs; the combination generates social regularities.

Institutional systems constitute a type of macro-level social equilibrium (a social order), but one that exhibits a punctuated equilibrium dynamic (long periods of stability; rapid bursts of change). Punctuated equilibria can be either self-reinforcing or self-undermining, reflecting the evolution of their capacity to withstand external shocks and/or internal changes. These social equilibria exist at multiple, sometimes nested, levels ranging from large social orders or political regimes to location- or domain-specific policy subsystems.[7] Indeed, specific institutions, configurations of complementary institutions, and institutional systems all constitute types of punctuated social equilibria. Specific social norms, for example, may periodically arise, persist, and then succumb to various social pressures. In the past fifteen years a long-standing norm against gay marriage has substantially eroded in many areas.

Reform operates within and responds to these social contexts.

Concepts of Reform

Successful reform alters formal institutions, and radical reform restructures institutional systems—punctuating social equilibria. More precisely, Hall and Thelen (2009, 20-21) define *reform* as "institutional change explicitly mandated or endorsed by governments" that originates from political compromises among relevant actors. Reform involves policy decisions at some level of governance, usually without displacing that form of governance in the short term, though multiple unanticipated consequences may follow, and decisions often react to unanticipated

[6] Institutional systems here are equivalent to Greif's (2006) institutions. My approach fits Greif's assertion that rules cannot alone *generate* social equilibria; complementary organizations are needed. But my approach maintains the distinction between rules and players. "We spent so much time distinguishing between institutions and organizations!" (Elinor Ostrom, conversation with the author, August 2011).
[7] At a cognitive level, the mental models of boundedly rational individuals operate as punctuated equilibria.

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events. An impetus for reform may arise from within governing organizations (e.g., reinventing government), non-governmental actors (e.g., pressure from the civil rights movement to abolish legal segregation), or from external events (e.g., wars, floods). Reform is often incremental, involving marginal adjustments to existing practices (Lindblom 1959).

Radical reform reconfigures institutional systems. It shifts key features of institutions along with associated mechanisms of coordination and enforcement.[8] The impetus for radical reform includes at least some participation from parties who are not part of an existing governing coalition (this condition need not apply to incremental reforms). An example of radical reform appears in the combined enactment and enforcement of the 1964 Civil Rights Act and the 1965 Voting Rights Act. These two acts represent the culmination of a political process—largely initiated by the civil rights movement—that dismantled the Jim Crow institutional system of legal segregation in the US South, a system that had endured since about 1880.[9]

Radical reform fits John W. Kindgon's (1993) concept of *policy emergence*—an "idea whose time has come" (Victor Hugo)—applied at multiple levels across an institutional system. Policy emergence requires a conjunction of "streams" of activity—a problem stream (reflecting widespread perceptions of salient problems), a policy stream (the flow of ideas in the policy community), and a political stream (the dynamic of power relations among relevant players). Such conjunction often follows *focusing events*—occurrences that simultaneously alter perceptions and expectations across multiple individuals (citizens, analysts, advocates, and/or officials). Emergence opens a window of opportunity for substantial reform.j

Drawing on Kingdon's windows and emphasizing government desire to undertake

[8] An institutional equilibrium need not imply unchanging formal institutions (Hall and Thelen 2009). Radical reform fits Hall's (1993) concept of third-order change—change that realigns goals so as to alter a policy paradigm.
[9] For an insightful discussion, see Wright (2013).

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reform, John T. S. Keeler (1993) asserts that extensive (i.e., radical) reform occurs when an economic crisis and/or clear electoral mandate sets the stage. When such developments appear to render reform beneficial to governments, windows of reform opportunity open.[10] This conception, however, does not address the activities of non-governmental actors.

Frank Baumgartner and Bryan Jones (1993) apply punctuated equilibrium theory to meso-level policy processes operating within specific policy domains. Policy subsystems (essentially meso-level institutional systems) dominate domain-specific policymaking because, unlike individuals, organizations incorporate an intellectual division of labor that efficiently processes information. Furthermore, subsystem participants strive to limit outside participation and placate opponents. Both tendencies generate relatively long periods of policy dominance that occasionally succumb to waves of opposition.[11]

Theda Skocpol's (1979) seminal discussion of social revolution—clearly a more complex phenomenon—offers additional insight.[12] Social revolution follows two basic types of disjuncture: class conflict, arising from increasing incompatibility between the material forces and social relations of production (as in Marx); and political conflict, arising in cases of "multiple sovereignty" during which a coalition of regime outsiders and disaffected insiders have enough power to displace key officials (Tilly 1978). She notes two other basic disjunctures: Chalmers Johnson's (1966) assertion that if a system fails to adapt to changing conditions, it loses legitimacy; and Ted Gurr's (1970) concept that relative deprivation fosters widespread psychological disjuncture (anger).

[10] Keeler(1993) discusses cases of substantive reform from both left- and right- leaning governments, with a focus on conditions that prompt governments to undertake serious reform.
[11] See also True, Jones, and Baumgartner (2007).
[12] Social revolutions transform both political structures and social relations of production; political revolutions alter political structures without shifting social relations and without necessarily involving class conflict (Skocpol, 1979).

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Noting the common thread of disjuncture, Skocpol criticizes these approaches for insufficient attention to the causes of mass mobilization. She poses two basic questions: what structural features tend to generate conditions for vast shifts in subjective perceptions that may then motivate revolutionary activity? And under what conditions will successful revolution follow? Ultimately, Skocpol asserts that social revolution accompanies widespread mobilization and conflict that arises from concurrent critical disjunctures in three sets of structural relations: class to class; class to state; and state to state.

Susanne Lohmann's (1993, 1994, 2000) signaling theory of collective action directly addresses Skocpol's question about individual motivation for collective action, but does so without addressing structure. Lohmann utilizes an (information) cascade of activity that resembles Kindgon's emergence. Like Skocpol, she invokes disjuncture. Lohmann, however, focuses on relative deprivation and asserts that deprivation alone is not sufficient to prompt mass collective action. Instead, imperfectly informed individuals—whose perceived net benefits from the status quo span a spectrum—repeatedly decide whether to participate in costly opposition activity. Each act of participation could (with sufficient numbers) topple the regime, and each act signals to others an individual's private perceptions of the regime and willingness to challenge it. When actual participation exceeds expectations, momentum can build. Occasionally, a succession of events precipitates a cascade of participation that topples a regime. Lohmann (1994) applies her model to mass action in Leipzig Germany 1989-1991.

From a different angle, William Sewell (1985) criticizes Skocpol for insufficient attention to the role of ideas and ideology. He argues that ideology, like class and class-state relations, operates as a fundamental and transformable structure. Ideologies are held collectively and anonymously (not a property of individuals). Like other structures, moreover, ideology has a

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dual nature: it both constrains and enables action. On one hand, ideologies shape the beliefs of willful actors; on the other hand, collective willful action can transform ideologies. Furthermore, ideologies inform "the structure of institutions, the nature of social coordination and conflict, and the attitudes and predispositions of the population (61)." Hence, analysis of social revolution should address ideological structures and dynamics.

James Mahoney and Kathleen Thelen (2009) and Thelen (2003), by contrast, focus on gradual reform. They assert that accumulated gradual reforms can significantly alter institutions.[13] Stability and change interact because institutions create ambiguities that invite contestation, and institutions require continuous reproduction by players who possess different interests and perceptions. Four basic types of institutional change follow: drift (environmental changes alter the impacts of existing rules); layering (agents add new rules to existing rules); conversion (agents reinterpret existing rules), and full displacement of institutions. All four types of institutional change respond to various motivations of potential reformers, different interpretations of rules and environments, and to asymmetric distributions of power.

Hall and Thelen (2009) and Peter Hall (2016) address the related topics of institutional stability, conflict, and prospects for change. Institutional stability relies on serving the (perceived) interests of agents who possess power. Conflict arises as multiple agents seek various avenues for promoting different interests. Some defend existing institutions; others test limits; some reinterpret rules; others violate rules. Even so, several factors promote institutional stability. First, because institutions allocate power, agents who derive power from existing arrangements tend to oppose change, often with significant positional advantage. Second, an even larger constituency for resting change includes parties who interpret benefits as

[13] Mahoney and Thelen reject a critical-junctures notion path dependency within punctuated equilibrium theory, citing Katznelson (2003) as an example.

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entitlements. Third, because significant change—notably resource reallocation and new technology—creates uncertainty, potential reformers may fear associated risks and lack a conception of how accomplish reform. Fourth, institutions generate network coordination that is difficult to unravel and hard to replace. Finally, complementarities among related institutions imply that prospects for changing one institution may depend on simultaneous changes in others.

Towards A Unified Framework

I propose to merge these approaches into a flexible punctuated-equilibrium framework that focuses on the myriad CAPs faced by activists. This approach will address Skocpol's question about how structural features can engender vast shifts in subjective perceptions, but it focuses on radical reform rather than social revolution, and it explicitly incorporates concepts of gradual institutional change, signaling, and ideology. More specifically, this paper will link the two phases of the punctuation cycle by addressing relationships between two broad categories of reform. *Typical* reform connotes gradual (incremental) institutional change via drift, layering, and/or conversion. Underlying structures of coordination remain largely intact. By contrast, *radical reform* connotes displacement: it restructures institutional systems in a manner that not only changes a significant number of complementary institutions, but also shifts modes of coordination. Radical reform reconfigures institutional and organizational mechanisms for resolving second-order CAPs.

During the stable phase of the cycle, activists face daunting first- and second-order CAPs related to prompting and harnessing punctuation. Much of the difficulty arises from the critical role that institutional systems play in (perhaps partially) resolving fundamental second-order CAPs whose resolution underlies social stability. Establishing a rule of law is an example.[14]

[14] The (implicit) promise that shoppers will not steal merchandise—derives its credibility from a set of norms and laws that discourage theft, along with relevant organizations (courts, police), via their capacity to sanction.

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Reform that undermines institutional systems poses huge risks and is fraught with uncertainty.

The ensuing first- and second-order CAPs, moreover, operate at two intertwined levels: that of motivating activity in spite of the costs and risks; and that of altering, shaping, and/or creating expectations among potential reformers concerning levels of participation and prospects for success. These expectations, in turn, rely on congruent expectations of sufficient coordination and enforcement of participatory agreements. Participants must then expect sufficient resolution of second-order CAPs within and among relevant groups. For example, in order to honor their own commitments to show up at demonstration and, say, face possible arrest, reformers must expect similar participation from many others.

Even so, a gradual accumulation of incremental changes—often outcomes of typical reforms—can undermine regime stability. Gradual changes can alter the values of important quasi-parameters—notably distributions of resources or configurations of technology.[15] Extant institutional systems may then cease to serve the perceived interests of agents who occupy, or come to occupy, positions from which they may disrupt or significantly alter institutional arrangements. More broadly, the composition of coalitions and balances of power may shift, rendering the system vulnerable to punctuation.

Like Skocpol's social revolution, radical reform involves significant (but not exclusive) participation from regime outsiders. During the stable phase, class- and/or identity-based social cleavages reflect and create divisions among various types of outsiders and between outsiders and regime beneficiaries.[16] A gradual accumulation of distributional outcomes, often interacting with external developments, may exacerbate such cleavages, fostering disjuncture. Political

[15] Quasi-parameters act as parameters for short-term interactions but, over time, respond to other variables. On institutional quasi-parameters, see (Greif 2006).

[16] See Mukand and Rodrik (2016) on social cleavages and types of democracy; see Shayo (2009) on identity and political economy; see Akerlof and Kranton (2000) on identity economics.

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conflicts along class, identity, and/or ideological lines ensue—often reflecting perceptions of relative deprivation. Such disjunctures undermine foundations of institutional stability—notably those related to legitimacy, coordination, and enforcement. Such disjunctures may prompt oppositional activity. A potential for either increasing or diminishing momentum emerges because observed participation at one point in time acts as a signal that influences future expectations. If participation exceeds prior expectations, collective action may successively increase over very short time horizons (e.g., July – November 1989 in East Germany). An accumulation of typical reforms interacting with social environments may then (endogenously) foster punctuation—sometimes manifested as radical reform.

On this foundation, discussion proceeds as follows. Section I utilizes simple two-person games to illustrate three assertions: 1) because, reform is a collective good, mobilizing support requires resolving first-order CAPs of free-riding; 2) the credibility of potential (often informal) agreements to resolve first-order CAPs rests on the prospects for resolution of both expectational and motivational second-order CAPs of coordination and enforcement; 3) social preferences and related incentives generated by social norms sometimes motivate participation by simultaneously addressing second- and first-order CAPs.

Section II applies these assertions to large groups in a manner that abstracts from power relationships (treating multiple agents as equals—an assumption not required in Section I). A multiplayer assurance game illustrates a critical-mass threshold of expected activity that activists must somehow cross before they can motivate large-scale participation. Path-dependency follows. Initial outcomes influence future expectations, implying a punctuated-equilibrium dynamic. Section III then develops a punctuated-equilibrium framework, at both the meso-level of policy subsystems and the macro-level of institutional systems. This approach incorporates

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sources of power and institutional stability, as well as the potential for an accumulation of various typical reforms to undermine institutional stability, fostering punctuation. Punctuation then manifests itself as an information cascade that spreads across a large social network. Punctuation opens a window of opportunity for activists.

I. Collective Goods, Free-Riding, Enforcement, and Motivation

From the point of view of potential beneficiaries, reform is a *collective good*: it is costly to provide and non-excludable in the sense that non-contributors benefit from provision.[17] Here, "goods" include economic goods and services along with multiple social arrangements, such as the judicial system. For example, only a small portion of the US population actively participated in the civil rights movement, yet society as a whole has benefited from its achievements.

Activists face first-order CAPs of motivating participation: let someone else do the work and take the risk. Here's an example:

> [Soviet Premier Nikita] Khrushchev first denounced Stalin's purges at the Soviet Communist Party's 20th Congress. After his dramatic speech, someone in the audience shouted out, asking what Khrushchev had been doing at the time. Khrushchev responded by asking the questioner to please stand up and identify himself. The audience remained silent. Khrushchev replied: "That is what I did too." (Dixit and Nalebuff 1993, 17)

A simple prisoners' dilemma game, can illustrate the material incentives for free riding. In Figure 1, potential reform supporters Ann and Ned each choose to either contribute time/money/risk to reform (C) or not (D). Suppose that the (non-exclusive) benefit from reform = 8; the total cost of organizing = 10 (5 each if shared; so that variable $a1$ = 3, etc.).[18] D is the dominant strategy for both players; the Nash equilibrium occurs at strategy combination DD. If both players follow their material incentives, reform fails. Both gain nothing.

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[17] A non-rival collective good is a pure public good.

[18] The variables (numbers) represent the net material payoffs to each player for each combination of strategies. Following convention, we list row player Ann's payoffs first.

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Figure 1: Reform as a PD Game

		Ned	
		C	D
Ann	C	$a1(3)$, $b1(3)$	$a3(-2)$, $b2(8)$
	D	$a2(8)$, $b3(-2)$	$a4(0)$, $b4(0)$*

Small alterations of this game can illustrate variants of the basic motivational dilemma. Ned, for example, may face higher costs (let $b1 = 1$ and $b3 = -4$). Another specification could designate groups as players (coalition A and coalition N). As long as the game retains a prisoners' dilemma structure, its logic suggests that reform will not occur: nobody wants to oppose Stalin.[19]

Suppose that Ned and Ann both understand the benefits of cooperation. Following a Coasian logic (low transactions costs to negotiation) they both, prior to play, agree to contribute. Yet, if Figure 1's payoffs are properly specified—that is, if these payoffs represent *everything* that the players care about—the agreement will lack credibility. Each does better by choosing D even if the other chooses C. Ann and Ned then face a second-order CAP (no enforcement). Anticipating this outcome, they may not even bother to negotiate.

Figure 1's pessimistic outcome notwithstanding, incidences of radical reform—often against considerable odds with high risk—do, in fact, occur. Explaining such resolution requires a more complete theory—specifically, one that can relate individual motivation to group dynamics. A first step in this direction incorporates the related concepts of social preference and social norms. The corresponding influences on game payoffs and expectations create a potential for more favorable outcomes.

Possible Resolution via Social Preferences and Social Norms

Social preference theory, largely developed by behavioral economists, augments the materially based concept of preference that often appears in standard economic and rational choice theory.[20]

[19] Whenever $a2 > a1 > a4 > a3$ and $b2 > b1 > b4 > b3$, the game has a prisoners' dilemma structure.

[20] Fehr and Fischbacher (2002) review social preference theory; on behavioral economics, see Camerer, Lowenstein, and Rabin (2004).

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Social preference theory links individual motivation to group behavior. It implies that, in addition to material outcomes, individuals care about the following:

- Returns to others: I may gain utility if a family member, friend, or colleague gains (or loses) income, goods, or status.
- Relative returns: how I feel about my own paycheck may depend in part on whether my colleagues earn more or less than I do.
- Processes that generate returns: the satisfaction I gain from receiving $100 may depend on whether I earned it, whether it was a gift from my mother, an outcome of luck, a bribe, an outcome of theft, and so forth.

The most important form of social preference in the economic literature is reciprocity. Reciprocity (strong reciprocity, Bowles 2004) connotes a willingness to sacrifice material payoffs in order to reward kind or fair behavior or to punish unkind or unfair behavior.

> Reciprocity means that in response to friendly actions, people are frequently much nicer and much more cooperative than predicted by the self-interest model; conversely, in response to hostile actions they are frequently much more nasty and even brutal. (Fehr and Gächter, 2000, 159).

More broadly, social preferences operate within social contexts that respond to social norms. *Social norms* are mutually understood behavioral prescriptions, with ethical content, that are both internalized by individuals and informally enforced by (some) norm internalizers. Norm internalization reflects adherence to ethical content: individuals who ascribe to (believe in) specific norms experience discomfort (guilt) when they violate such norms, even if no one else notices.[21] Norm enforcement arises spontaneously (hence somewhat unpredictably) by adherents: a passerby may or may not glare at a person who litters in a park. Spontaneous norm enforcement can resolve second- and, by extension, first-order CAPs: an expectation of possible sanction can motivate adherence to a norm that prescribes contributing to a collective good.

[21] On the ethical content of norms, see Elster (1989a; 1989b), Bowles (2004), Dequech (2009), and Mengel (2008). See Ostrom (1998) on reciprocity as a social norm. For an overview, see Ferguson (2013).

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Reciprocity itself often becomes a broadly applicable social norm (as in a mutual expectation of reciprocal gift giving), and reciprocal inclinations can motivate spontaneous enforcement of other norms. If I sacrifice time or effort to follow a norm, such as not cutting in line, I may resent another's violation (non-reciprocation) enough to complain out loud. In terms of Figure 1's simple game, reciprocal preferences and social norms can resolve CAPs within relevant groups by reducing the expected payoffs to various forms of defection. For example if the internal discomfort and/or anticipated social sanction from norm violation reduce Figure 1's defection payoffs by 3, the Nash equilibrium shifts to CC. Mutual expectations of reciprocity or norm adherence can thus resolve second-order CAPs by establishing credibility for participatory agreements. First-order free riding then becomes unattractive.

II. Conformity, Coordination, Expectations, and Tipping Points

Social preferences and social norms operate concurrently within groups—ranging from families to nations and societies. Relatively simple multi-player games of assurance can illustrate associated relationships between individual motivation, expectations, group dynamics, and various structural conditions from the larger social environment.

More specifically, a multiplayer model that, for simplicity, assumes equality among players (e.g., equal power) can illustrate how pressures for conformity or solidarity influence individuals' expectations of and motivations for reform. The model's parameters can, moreover, represent (possibly changing) features of political environments. Conformity pressures imply that individuals gain utility by imitating others and lose utility by choosing different paths. This simple notion not only fits a basic concept of reciprocal behavior, it also fits internal and social pressures for norm adherence. And it fits a general desire to seek status via imitation of popular activity, trends, or beliefs. Conformity pressure can thus motivate either quiescence or reform

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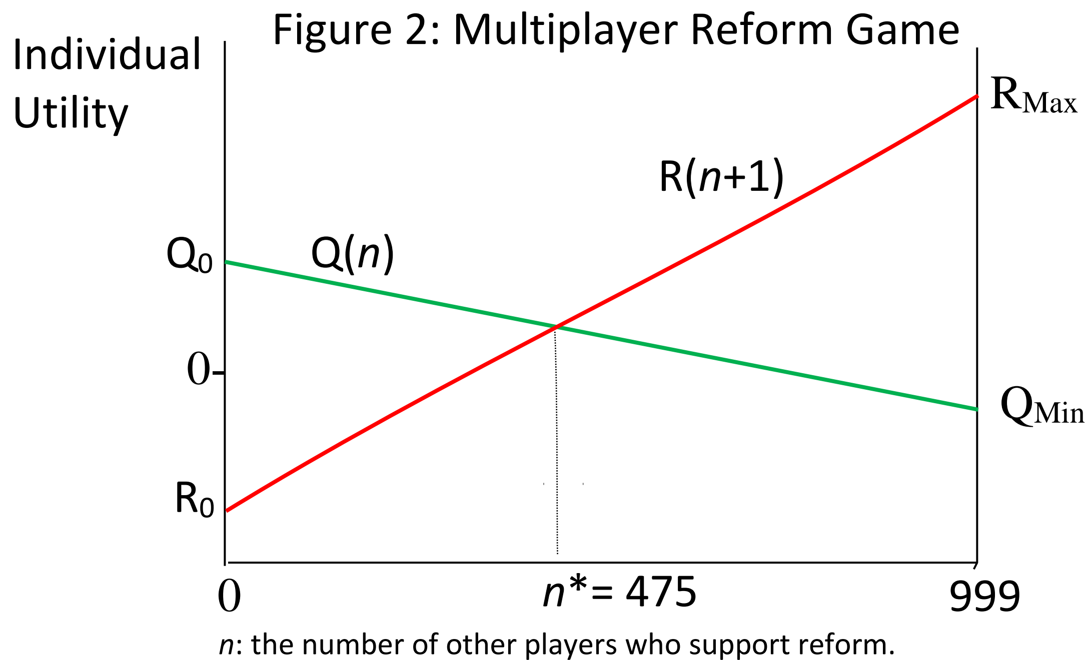
activity. Realization of the latter depends fundamentally on resolving second-order CAPs of coordinating expectations that others will, in fact, honor agreements.

Figure 2 illustrates a multiplayer game of assurance. By incorporating a conformity dynamic, it represents CAPs of attaining a critical mass of support—and the associated properties of path-dependency and self-fulfilling expectations.[22] Suppose that each individual who belongs to a group of 1000 face two choices: support reform (R) or stay quiet (Q).

Figure 2: Multiplayer Reform Game



Reflecting conformity effects, the R(n+1) function slopes upward: the payoff to choosing R increases in n, the expected number of *other players* choosing R.[23] In equation form:

(1) $R(n + 1) = R_0 + r(n + 1)$,

where R_0, the left-hand intercept, represents the individual's expected utility from choosing R if nobody else does ($n = 0$); the negative payoff reflects an expected sanction (social ostracism or jail time). The slope coefficient r represents the expected marginal utility gain ($\partial R/\partial n$) from

[22] This logic resembles Kuran (1989) and Schelling (1978)
[23] The term R(n + 1) signifies that if (and only if) the individual chooses R, then there are n+1 participants.

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each expected contribution to reform from another group member. The large positive value at R_{Max} reflects a full conformity payoff. A mirror image logic applies to choosing Q, as illustrated by the downward-sloping Q(n) function:

(2) $Q(n) = Q_0 - qn$

The high payoff at Q_0 declines steadily in n (at rate $-q$), becoming negative at intercept Q_{Min}.

This model has three equilibria: two stable equilibria at no support ($n = 0$, Q) and at full support ($n = 999$, R); and an unstable internal equilibrium at n^*. The accompanying dynamics illustrate key elements of reform-related CAPs. At both stable equilibria, an individual's payoff to continuing with a chosen strategy (Q or R) greatly exceeds that from shifting. Any small deviation among participants thus generates incentives to return to the initial equilibrium. This stability implies path-dependence. Either stable equilibrium will then persist until a noticeable shift in underlying parameters alters the incentives. For example, the onset of war may alter understandings of various relationships between the net benefits to reform and rates of participation. The intercept and/or slope terms would shift, and possibly change the outcome.

The third equilibrium ($n = n^*$) illustrates the model's critical-mass properties. Here, the individual is indifferent between Q and R, but the equilibrium is unstable because a small deviation in either direction would induce continued movement in that same direction—reflecting a positive-feedback (or increasing returns) dynamic.[24] As such, n^* depicts a critical-mass threshold (a tipping point) that often accompanies reform processes. When an individual expects participation above n^*, the expected payoff to R exceeds that from Q. If others hold the same expectation, support becomes cumulative and self-reinforcing: each increment in support

[24] Though unstable, n^* is a Nash equilibrium: given expectations, no player has a unilateral incentive to change strategies. Positive feedback implies that motion in one direction induces subsequent motion in that same direction. With negative-feedback (as in a supply/demand model) motion in one direction prompts a counteracting response. Positive (negative) feedback dynamics generate unstable (stable) equilibria.

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enhances the incentive, moving the group towards full support. Likewise, expectations of $n < n^*$ lead to self-reinforcing quiescence. This positive-feedback dynamic, moreover, suggests a self-fulfilling property of shared expectations: initial expectations concerning n's relation to n^* influence subsequent equilibrium outcomes, and so become self-fulfilling.

This simple model illustrates important CAPs for activists. An initial (self-fulfilling) expectation of general acquiescence creates second-order CAPs of reversing expectations. Activists must unravel this CAP before any credible agreement to circumvent first-order CAPs can take hold. Concurrently, the model's parameters can represent structural influences from the political environment. Intercept terms (R_0, Q_0) can reflect various environmental influences on payoffs, independent of participation. The slope parameters (r and q) can represent the strength of conformity effects that, in turn, respond to conditions in the social environment.

Several possible variations can extend the model's applications. First, by specifying minimum and/or maximum levels of n (within N) the model can incorporate a (typically small) portion of agents who always either support or oppose reform. Second, distinct versions of this game can illustrate different underlying attitudes held among distinct groups (communities, coalitions). A version of Figure 2 with a set of group-specific parameters (R_{0i}, r_i, Q_{0i}, q_i) can represent distinct attitudes and corresponding reform prospects for a specific group i. For two distinct groups, Figure 2's outcomes could influence the payoffs in a two-coalition reform game shown in Figure 1.[25] Alternatively (or perhaps concurrently) one group's expectations regarding participation and payoffs may depend, at least in part, on activities or outcomes from the other group; or, in a more complicated case, from several groups. Coalition-specific versions of equations (1) and (2), with a few added variables, could illustrate such group interactions. Third,

[25] With modification, Figure 1's game can become assurance, chicken, or battle-of-the-sexes. Each implies different types of CAPs. Chicken and battle, for example, can represent between-group conflict.

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the model's comparative statics can represent various influences of specific changes in the political environment. For example, the model's (quasi) parameters (R_0, etc.) could respond to changes in the distribution of resources among various coalitions.[26]

Overall, these relatively simple models illustrate how, in the presence of conformity effects, second-order CAPs of coordinating group expectations interact with CAPs of motivating participation—both within and among coalitions. Figure 2' payoff functions represent how expected participation can influence various social and material incentives of group members. Potentially malleable expectations then act as either impediments to or conduits for attaining a critical-mass of support for radical reform. Anticipated support, or lack thereof, thus critically affects outcomes. Hence the importance of "spin" in politics. Moreover, the models' parameters can represent how, potentially changing, external conditions can shape collective assessments and payoffs. These models thus present relatively simple methods for merging individual and group proclivities and expectations with structural conditions from the larger political environment—as they relate to prospects for radical reform.

With this background, discussion proceeds to a general framework for representing the dynamic properties of CAPs and reform.

III. Punctuated Equilibrium Policy Theory as a Dynamic Framework

Punctuated equilibrium policy theory offers a foundation for conceptually linking micro-level information processing, meso-level policymaking, and macro-level institutional stability with reform dynamics and related CAPs. More specifically, the properties of micro-level information processing interact with asymmetric distributions of power to generate a punctuated equilibrium dynamic for meso-level policy subsystems. Within meso-level policy domains, relatively long

[26] In functional form, $R_0 = R_0(x1, x2 \ldots)$; each x represents a relevant component of the political environment.

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periods of policy stability succumb to dramatic shifts that accompany outpourings (waves) of enthusiasm and/or criticism. At the macro-level of institutional systems, complementarities among institutions substantially reinforce such stability. Yet, institutional systems occasionally also succumb to punctuation. Within this dynamic, gradual stable-phase developments and outcomes (e.g., a changing distribution of resources), can render the system increasingly vulnerable to punctuation, and even radical reform—should activists have the ability to seize the opportunity.[27] The related concepts of policy subsystems, sources of power, policy emergence, and information cascades jointly inform the subsequent analysis.

This section's discussion proceeds as follows: First, a meso-level punctuated-equilibrium policy framework establishes foundations for a similar dynamic at the macro-level of institutional systems. Second, consideration of power and its sources provides additional structural context. The argument proceeds to sources of institutional stability, followed by a listing of basic types of institutional change. Because the roots of punctuation often reside in an accumulation of various gradual changes, punctuation is at least partially endogenous. Within this context, agents exhibit distinct approaches to the status quo and reform; a five-fold typology illustrates. Finally, the concept of information cascades within social-networks can portray the onset of punctuation.

At the meso-level of geographic and/or issue-delineated policy domains (e.g., energy policy in California), policy subsystems dominate policymaking during the stable phase of a punctuation cycle. Policy subsystems are meso-level institutional systems that make and implement policies. They are configurations of complementary institutions, organizations, and coalitions—both within and outside of government—that shape policymaking within specific

[27] An alternative form of punctuation is civil war (e.g., contemporary Syria).

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domains. Stable-phase dominance arises from the combination of organizational economies of information processing and power asymmetries.

The logic of information processing underlies a punctuation dynamic for policymaking (Baumgartner and Jones 1993). Cognitively limited boundedly rational individuals engage in *serial information processing*: they can investigate only one or a few issues at a time.[28] In contrast, organizations utilize *parallel information processing*: by delegating specific topics to specific subgroups or committees, organizations investigate multiple issues concurrently. Organizations thus attain large economies of information processing that generate a balkanization of knowledge. The associated division of intellectual labor resolves enormous second-order CAPs of coordinating effort and channeling information. Policy subsystem stability thus arises from substantial economies of information processing. Power asymmetries both emerge from and reinforce these dynamics.

Conceptions of Power

Asymmetric distributions of power permeate punctuation cycles. Exercises of power, and a perceived potential to do so, condition expected outcomes, available strategies, and information flows, as well as underlying social environments. Power relationships both support and disrupt policy equilibria; concurrently, policies respond to and alter power relationships.

Power is the ability of an individual or group to deliberately employ sanctions or manipulative communication in order to induce others to act in a manner that the former (perhaps mistakenly) believes is in its own interest and that the latter would not otherwise pursue. Note that this definition does not rule out positive-sum gain (Pareto improvement). Power arises from the three interrelated, fundamental sources: (i) access to resources (e.g.

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[28] Baumgartner and Jones draw on Simon (1955, 1977, 1983, 1985); see also True, Jones, and Baumgartner (2007).

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campaign funds or guns); (ii) institutionally designated positions (e.g. Chair of the Senate Foreign Relations Committee), and (iii) a demonstrated ability to resolve organizational CAPs—all else equal, coherent coalitions exercise more power than disjointed ones. All three sources interact in complementary fashions. Position facilitates resource access and vice versa.

A related distinction concerns *de facto* and *de jure* power. De jure power flows from institutional positions and designated access to resources. Like the institutions that underlie it, de jure power tends to endure during the stable phase of the cycle. De facto power, by contrast, arises from resolving organizational CAPs—typically short lived unless institutionalized—complemented with temporary resource access. Punctuation often follows dramatic shifts in de facto power, combined with prior gradual erosion of the de jure power of dominant coalitions.

Exercises of power operate along three basic dimensions (or faces; Lukes 1974):

- Power1: direct application of force, bargaining strength, or voting power within a given and well-understood set of rules.
- Power2: altering rules (of the game) and associated expectations concerning others' actions, in order to bias subsequent interactions. Exercises of power2 are strategic moves (Schelling 1962); and they often deny opponents access to relevant resources or arenas (as in Bacharach and Baratz 1960).
- Power3: manipulating preferences and beliefs of potential opponents concerning the possibility or appropriateness of opposition, or even the perception of conflict.[29]

Power relationships condition both institutional stability and vulnerability.

Sources of Institutional Stability

Institutional stability emerges from the combined influences of subsystem information-processing, institutional complementarity, and asymmetric distributions of power. These attributes structure relationships between dominant and opposition coalitions by establishing

[29] Ferguson (2013) applies a game-theoretic approach to Luke's three faces of power.

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entry barriers into policymaking.

During the stable phase, comparative advantages of information processing and access to positions facilitates the preeminent role of policy subsystems within policy domains. Within subsystems, *advocacy coalitions*—configurations of organizations formed around shared core policy beliefs—promote specific policy agendas (Sabatier and Jenkins-Smith, 1988). One or a few such coalitions, with substantial access to the sources of power, tend to dominate policy agendas and decisions. De jure positions and procedures (themselves outcomes of prior exercises of power2 and often power3) confer distinct advantages with respect to access to decision arenas and to resources, such as information, funding, staff, and membership. Prior resolution of multiple organizational CAPs reinforces such advantages. Oppositional coalitions operate on the sidelines, as they strive to reform or replace existing subsystems.[30]

More specifically, within established institutional contexts, contesting parties exercise power1 as they negotiate the distribution of the costs and benefits of incremental policy changes. Because dominant coalitions usually possess substantial bargaining power, they can negotiate outcomes that approximate their policy preferences, sometimes offering small concessions to placate opponents. Figure 3 in the Appendix, shows an illustrative Nash bargaining model. The dominant coalition's superior fallback position and bargaining strength award it a high share of the negotiated outcome.[31] In terms Figures 1 and 2, unequal distributions of power1 influence the expected net gains from contributing to reform activity. In Figure 2, authorities' known ability to sanction small groups of reformers influences the difference $Q_0 - R_0$.

At a deeper level, dominant coalitions utilize powers 2 and 3 to ward off opposition. Exercises of power2 affect access (e.g., who testifies at hearings). On Figures 1 and 2, barring

[30] Sabatier and Weible's (2007) prototypical policy subsystem has one dominant and one oppositional coalition.
[31] Relative bargaining strength (α/β in Figure 3) depends on relative access to the three sources of power.

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access can eliminate strategies C and R. Additionally, newly threatened sanctions (ones not already anticipated from extant rules) can alter expected payoffs. Figure 2's R(n) and Q(n) functions may rotate or shift, moving $n*$ rightward, enhancing CAPs for activists. Regarding power3, dominant coalitions may use the media to placate the public (experts will handle these complex problems) or discredit opponents (naive, misinformed, vile).[32] Such manipulation can alter policy-relevant interpretations of social norms. Labels like "(un)fair" or "(in)equitable," can influence public reactions. Potential reformers may then not even conceive of strategic encounters; or they may interpret payoffs so that strategy R cannot possibly yield benefits. The R(n) curve may shift to a position always below Q(n).

Overall, the combined influences of subsystem information-processing, relative power advantages, and associated incentives generate substantial entry barriers to policymaking. Five basic barriers follow:

1. Institutionalized procedures (e.g., who sets agendas, attends meetings, votes, and receives information) both grant and restrict policy access to individuals and organizations.

2. Existing procedures and corresponding distributional and positional outcomes often generate a sense of entitlement among beneficiaries.

3. Dominant coalitions can placate potential opposition by offering incremental changes, i.e., typical or "placebo" reforms (Speigler 2013).

4. A generalized lack of time and attention to many (often technical) issues limits policy input from the serial-information processing public.[33]

These first four barriers underlie the stable-phase stability of meso-level policy subsystems, creating relatively durable policymaking equilibria.

5. At a macro level, institutional arrangements are complementary. A reform coalition that, in principle, could alter the workings of a specific policy subsystem, often cannot achieve

[32] Power3 manipulates beliefs in four broad areas: i) the existence of a conflict of interest (what I want is really good for you); ii) the appropriateness of challenging authority (how dare you!); iii) the possibility of change (just the way things are), and/or iv) the potential targets of opposition (they did it!).
[33] The acquisition of policy information is subject to free-riding (Olson 1965).

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success unless it coordinates with (or creates) other coalitions that can simultaneously challenge complementary subsystems.

Jointly, these barriers create substantial CAPs for activists that, at least cumulatively, elude resolution—prior to the onset of punctuation.

Three examples follow. At the meso level, between the early 1950s and the early 1970s, the Atomic Energy Commission, along with key industry representatives and relevant congressional committees, operated as a policy subsystem that set the agenda for nuclear policy (Baumgartner and Jones, 1993). On a larger scale, between roughly 1947 and 1990, communist party leadership—a dominant political coalition—established and directed political, economic, and social policy within Eastern Europe. Likewise, the (dominant) coalitions that created and maintained the Jim Crow system of legal segregation in the US South largely governed that region's racial policy from circa 1880 until 1965. In all three cases, oppositional coalitions existed (e.g., dissident nuclear scientists, dissident east-block intellectuals, and the emerging civil rights coalition). Yet they were unable to substantively affect policy during the long stable phase.

Sources of Punctuation

Baumgartner and Jones (1993) assert that punctuation emerges from either waves of enthusiasm (Downs, 1972) or waves of criticism (Schattschneider, 1960).[34] Likewise, for Kingdon (2003) policy emergence connotes a rare proclivity for an idea to capture attention across broad swaths of policymakers and the public. Emergence also reflects an information cascade in a social network (Lohmann, 2000). Nevertheless, cumulative stable-phase developments establish important pre-conditions for punctuation.

Broadly speaking, punctuation arises from gradually accumulating stable-phase outcomes

[34] Aoki (2000) applies punctuated equilibria to institutions.

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and/or specific sudden events—each of which may have internal and/or external sources. Table 1 illustrates four possible combinations of the timing and loci of key punctuation developments.

Table 1: Possible Loci and Timing of Key Punctuation Developments			
		TIMING	
LOCUS of Underlying Developments		Cumulative →	Sudden
	Internal endogenous	**A** Internal outcomes e.g., changes in distribution, positions	**C** primarily internal FE e.g., Tahir Square
	External exogenous	**B** Foreign or non-human causes e.g., trade sanctions, severe floods	**D** Exogenous FE e.g., Fukushima
Legend: FE = Focusing event			

In cells A and B, evolving internal and/or external developments gradually weaken current arrangements. Accumulated changes in critical factors (e.g., technology, resource distribution) and common interpretations of institutional prescriptions can gradually undermine existing arrangements in multiple complementary fashions—though often in disjointed and reversible manners. Relative bargaining power among coalitions may shift, inducing changes in the composition and size of coalitions and access to policymaking positions. Corresponding shifts in common perceptions of the efficacy, desirability, and legitimacy of status quo arrangements may reinforce such tendencies—and foster corresponding perceptions of relative deprivation or unfair procedure. Increasingly conflictual ethnic, religious, racial, national, or class relations may ensue. These developments create CAPs for status-quo beneficiaries and precipitate increasingly contested sovereignty. Ensuing disjunctures render the system increasingly vulnerable to internal and external shocks. Sudden events may now alter social understandings—and so become focusing events, rather than mere incidents.

In cells C and D, sudden events rapidly focus attention on specific problems and

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associated disjunctures—generating waves of criticism or enthusiasm. For example, Mohammad Bouazizi's self-immolation on December 17, 2010, precipitated widespread protests; Tunisian President Zine El Abidine Ben Ali, resigned 28 days later. Likewise, Japan reoriented its nuclear policy after the tsunami flooding of the Fukushima nuclear plant. Such focusing events can rapidly shift the composition and power of supporting and oppositional coalitions, creating fertile ground for meso- or macro-level punctuation.

A more in depth discussion of institutional change, types of agents, and power facilitates linking the two phases of the cycle.

Varieties of Institutional Change, a Typology of Agents, Coalitions, and Power

Social scientific applications of punctuated equilibrium theory have been criticized for invoking punctuation as a type of *deux ex machina* (citation). In contrast, this paper links the two phases of the punctuation cycle by considering how certain types of institutional change create conditions that favor punctuation. Both gradual and sudden institutional change can emerge from the inherent ambiguities of institutional prescriptions. Parties with diverse interests interpret specific prescriptions differently. Conflict follows, as does continuous adjusting of institutions and an ever-present need for institutional reproduction.

Four main factors contribute to institutional ambiguity (Mahoney and Thelen, 2009): First, rules suffer from imprecise specification. For example, what exactly did the committee that drafted the Second Amendment to the US Constitution mean by: "*A well regulated militia, being necessary to the security of a free state, the right of the people to keep and bear arms, shall not be infringed"?* Rules become objects of political skirmishing among different interests. Second, cognitive limits among drafters preclude clear foresight. The Second Amendment's drafters did not foresee the technology of Uzis and AK47s. Third, implicit assumptions underlie how

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institutions operate. The predominant current assumption applies the phrase "*the right of the people to keep and bear arms*" to individuals. Yet the Preamble of the US Constitution invokes a collective interpretation: "We the People, in order to form a more perfect union…" Fourth, the enforcers of institutional rules, who rarely draft them, exhibit discretion over precise application. Does a person driving 10 mph above the speed limit receive a ticket or not?

Ensuing conflicts then engender four basic categories of institutional change: drift, layering, conversion (reinterpretation), and displacement (Mahoney and Thelen, 2009).

More precisely,

1. Institutional *drift* connotes a tendency for changes in social environments to alter the impacts of existing rules, especially their implementation.

2. *Layering* means that various parties supplement existing rules with new rules. Such additions can shift incentives, alter strategies, redirect information flows, and indirectly influence agents' understandings of processes and environments.

3. Institutional *conversion* arises when various parties exploit ambiguities by reinterpreting rules to suit their ends. Conversion can reconfigure agents' understandings of processes, likely outcomes, and social environments. New interpretations may defy initial purposes and undermine legitimacy.

These first three categories are variants of incremental change—typical reforms. Their cumulative impact (e.g., distributional shifts), often combined with focusing events, can obstruct implementation, stifle institutional reproduction, and invite the fourth type of change:

4. *Displacement* eliminates and replaces (punctuates) institutions. Radical reform can follow—that is, if activists can resolve their own set of CAPs.

Within this framework, various agents initiate and resist institutional change—of whatever sort. A five-fold typology of agent dispositions facilitates analyzing their interactions. The proportions of agents that fit each type evolve—often shifting rapidly at the onset of punctuation. Specific activities for each type may also differ during the two phases.

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Prior discussion has distinguished between activists and regime beneficiaries. The following typology delineates such agent dispositions more precisely.[35]

1. *Open activists* (OAs) publically promote radical reform. They mobilize opposition and violate existing rules. They either belong to disadvantaged groups or have other strong reasons for opposition (e.g., disaffected elites). In either case, OAs form an identity that incorporates opposition to the regime, and they belong to recognizable opposition coalitions.

2. *Hidden activists* (HAs) promote radical reform under cover. They hide their preferences and follow rules—at least on the surface. HAs wait for opportunities to directly oppose the status quo. They may secretly belong to oppositional coalitions.

3. *Opportunists* (OPs) seek their own benefit from any given arrangement. They do not, in principle, either support or oppose the existing regime. During the stable phase, OAs may belong to supporting coalitions, but the onset of punctuation can shift their allegiance.

4. *Parasitic Beneficiaries* (PBs) benefit from the status quo and follow rules, but their actions tend to conflict with the purpose (or spirit) of extant institutions. PBs thrive in environments with strong expectations of rule adherence but weak enforcement of specifics. Especially during the stable phase, PBs may belong to coalitions that support the status quo.

5. *Supportive Beneficiaries* (SBs) benefit from the status quo without undermining it. They often belong to supportive coalitions and maintain allegiance at least through the onset of punctuation.

On this foundation, Table 2 illustrates how the relative power of a dominant coalition can both condition and respond to interactions involving power, the specificity of institutional prescriptions, types of agents, and types of intuitional change.[36] Rows **A**, **B**, and **C** designate gradations of DC power; columns **1** and **2** show levels of institutional specificity; column **3** shows outcomes related to institutional reproduction. Within cells **A1**-**C2**, *italics* show applicable categories of institutional change; the relevant types of agents appear below. Within an institutional system, cells on the same row operate simultaneously: some prescriptions are relatively clear; others less so. The ratio of column **1/2** activity roughly signifies institutional

[35] This typology borrows heavily from Lohmann (2000).
[36] Table 2 draws from Table 1.4 in Mahoney and Thelen (2009).

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strength.[37]

In row **A**, DC veto power precludes significant negotiation. Even so, in cell **A1**, drift arises from changes in the social environment and various forms of inattention. Moreover, PBs and HAs respectively attach self-serving and dysfunctional specifications to existing rules: institutional layering. In cell **A2**, weak specification fosters ambiguity, enhancing opportunities for layering and drift, especially by HAs who hold positions related to implementation and enforcement. For example, police in a dictatorship may deliberately ignore certain opposition activities. SBs, on the other hand, may respond with layering aimed at strengthening the regime. Even so, ambiguity and conflict can increase over time. Cell **A2**'s share of activity increases.

Table 2: Power, Institutional Specificity, Types of Change, and Types of Agents

	Specificity of Prescriptions		**3** Outcomes on Reproduction
Power of the DC	**1** Precise	**2** Weak (leeway)	
A Strong can veto explicit changes	**A1** *Layering* HAs, PBs *Drift* via inattention	**A2** *Layering* as in A1 *Drift* as in A1 and via PBs, HAs	Slight weakening, lowering R_{DC}
B Weaker negotiate with opposition	**B1** *Layering* HAs, OPs *Drift* Inattention: HAs, PBs	**B2** *Conversion* *Layering &Drift* HAs, OPs, PBs	Weakening; Large drop in R_{DC} S-O & F-O CAPs for DC & SBs
C Weakest vulnerable	**C1** *Displacement via confrontation* OA & HA-led coalition, with OPs, PBs	**C2** *Displacement via collapse in legitimacy* OA & HA-led coalition with OPs & PBs	Punctuation; Window of opportunity for radical reform
Legend: OAs: open activists; HAs: hidden activists; PBs: parasitic beneficiaries; SBs: supportive beneficiaries; OPs: opportunists; R_{DC}: DC relative access to resources.			

Exogenous events (e.g., external economic sanctions and floods) can accelerate drift and layering. Developments in both cells enhance (second-order) CAPs of maintaining institutional

[37] The specificity of prescriptions ≈ institutional strength/the complexity of relevant problems.

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stability. Eventually, the efficiency of specific procedures declines, as does DC relative access to resources ((R_{DC}). Some activity moves to row **B**. Here, weaker DC power creates opportunities for opposition coalitions to force negotiation over specific prescriptions, opening new conduits for drift and layering. In cell **B1**, HA and PB layering increases and opportunists (OPs) join in. Drift accelerates. In cell **B2**, greater ambiguity encourages these activities, and weak specificity fosters institutional conversion. Shared understandings of relationships between extant institutions and the social environment change. The proportion of activity in **A2** and especially **B2** increases. Again, the DC faces greater second-order CAPs of implementation. Conversion, moreover, creates new first-order CAPs of free riding among beneficiaries. Conflict increases within and among groups (even among SBs). External developments may accelerate these processes.[38] Institutional efficacy and R_{DC} decrease over time, though unevenly. When these processes sufficiently undermine DC power and regime legitimacy, activity moves to row **C**.

In cells **C1** and **C2**, weak DC power opens opportunity for serious challenge. In cell **C2**, the combination of weak DC power and weak specification accelerates drift, layering, and especially conversion. Enhanced ambiguity and conflict undermine the legitimacy of the system: disjuncture. Simultaneously in **C1**, weak DC power and the remaining rigidity of some institutions (e.g., rules governing access to key positions of political and economic power) invite direct confrontation: another disjuncture. An OA/HA-led coalition that includes increasing numbers of OPs and PBs directly challenges the regime. These **C1** and **C2** activities complement each other: collapsing legitimacy fosters confrontation and vice versa. Sufficient disjuncture along several dimensions now invites punctuation, opening a window of opportunity for radical

[38] External sanctions can alter distribution and weaken rent- and power-sharing arrangements among elites, eroding DC ability to resolve CAPs. In South Africa, the 1980s trade sanctions contributed to rising discord within the white ruling coalition, making it vulnerable to organized opposition from the African National Congress. The National Party chose new a leader, F. W. De Clerk, who negotiated with the ANC to end the apartheid system.

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reform. If the oppositional coalition(s) can resolve their remaining CAPs—first-order free-riding and internal conflict (often between OAs and HAs)—as well as second-order coordination and enforcement of the coalition's own prescriptions—radical reform may follow. Equivalently, if the opposition is sufficiently organized and adaptive, it may seize the opportunity provided by the open window.

Figure 2's model can again illustrate. The three types of gradual institutional change and ensuing changes in R_{DC} alter the values of parameters R_0, r, Q_0, and q (now quasi-parameters). The R(n) and Q(n) functions shift and rotate, pushing n^* to the left. Activists now face less daunting CAPs: a smaller coalition could induce punctuation. More precisely, the terms R_0, r, Q_0, and q, may be specified as functions of the dominant coalition's relative power (P_{DC}). Equation 3 offers an example for the parameter R_0:

(3) $R_{0t} = R_{0t}(P_{DCt}) = R_{0t}(P_{DCt}(R_{DCt}(\Delta I), IP_{DCt}(\Delta I), OC_{DCt-1}))$.

Intercept R_{0t} depends on DC Power (P_{DCt}), itself a function the three sources of power: DC relative resource access (R_{DCt}); institutional position (IP_{DCt}); and ability to resolve internal CAPs, shown by the previous period's organizational capacity ($OC_{DC}t\text{-}1$). Within this function, terms R_{DCt} and IP_{DCt} both depend on institutional change from the previous period (ΔI). ΔI, in turn, depends on the institutional specificity ratio (θ = precise/weak) and on the three types of gradual institutional change from the prior period—also functions of θ. More precisely,

(4) $\Delta I = \Delta I(\theta; d(\theta), l(\theta), c(\theta))_{t-1}$.

Here d, l, and c respectively signify the rates of drift, layering, and conversion. Figure 2's other parameters (Q, r, and q) have analogous functions.

Returning to Table 2, as activity moves in the direction of row **C**, all four arguments of (4) increase. Ensuing changes in R_{DC} and IP_{DC} can alter the rules of underlying political games,

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including who has access to relevant arenas, available strategies, the timing of moves, the availability and distribution of information, and the expected payoffs at each possible outcome. In Figure 2, n^* moves closer to the origin. Activists face a less substantial CAP; the pre-conditions for punctuation now exist.

The Onset of Punctuation

Table 2's dynamics link the two phases of the punctuation cycle—rendering punctuation, at least partially, endogenous in the long run. When accumulated drift, layering, conversion, and the associated erosion of both DC power and status quo legitimacy approach a critical-mass threshold, the system becomes vulnerable. A sudden focusing event can then shift expectations enough to cross an n^* tipping point, reversing the pressure of incentives—inducing a wave of criticism that undermines a previously stable social equilibrium: punctuation. For well-placed, alert, and adaptive activists, punctuation can quickly resolve multiple, otherwise insurmountable, second- and first-order CAPs.[39] For example, the onset of the Great Depression in the United States fostered the election of Franklin Roosevelt, with a mandate for change. Ensuing New Deal legislation altered the federal government's role in the economy. That, combined with the emergence of large industrial unions in the 1930s, shifted labor relations, and precipitated an equalizing shift in the distribution of income.[40]

As suggested by Table 2, incremental policy decisions (typical reforms) can gradually create pressure for punctuation—often as an unintended consequence. The internal dynamics of both meso- and macro-level institutional systems may then sow the seeds of their own demise. For example, in South Korea between 1961 and 1987, the pro-growth industrial policies of the

[39] Rapid punctuation precludes coordinated response. Multiple of CAPs of consolidating and implementing new arrangements follow—one reason revolutions so often fail to achieve initial objectives.
[40] On FDR's mandate, see Cohen (2009); on labor, see Bernstein (1960). On shifting income distribution, see Piketty and Saez (1993).

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Park Chung-hee and Chun Doo-hwan dictatorships gradually disseminated resources to the middle and working classes, enhancing their power. By the mid-1980s, Korean labor unions had the capacity to significantly reduce national output, notably exports. Furthermore, shifting aspirations and perceptions of the role of government undermined the government's legitimacy. As unionized workers, students, and opposition parties demanded more representation, a series of successful strikes and demonstrations culminated in the June 1987 uprising—20 days of strikes and huge mass protests across many cities. A transition to democracy followed.

As punctuation takes hold, new coalitions form as parties reinterpret their interests and prospects. As perceptions shift, participants become receptive to new ideas, creating openings for political creativity. Innovations follow, often with individuals playing an enhanced role (Hall 2015).[41] Cascades of change may then emerge.

Information Cascades and Punctuation

The concept of information cascades within social networks offers a distinct but related representation of policy emergence.[42] An *information cascade* signifies the rapid adoption of a new idea or practice across a large social network. Sudden internal or external events (Table 1's right-hand column) can precipitate information cascades. Such focusing events create disjunctures between prior conceptions and new developments; they evoke extensive "double-sided" re-evaluation, whereby the meanings of events and existing beliefs are reinterpreted in light of each other (Hall, 2005, 136).[43] Waves of criticism or enthusiasm may then spread rapidly across large networks.

[41] An example: Vladimir Lenin's reaction to Russia's entry into World War I precipitated his emergence as the leader of a successful revolutionary coalition.

[42] On information cascades, see Watts (2002). On social network theory, see Jackson (2008)

[43] Punctuation accompanies shifts in conceptual frameworks or mental models (re-evaluative learning; Kahneman 2003). On institutions as shared mental models, see Denzau and North (1994; on relations to punctuation, see Ferguson (2013 and 2015). On the influence of new ideas for development, see Rodrik (2014); on institutional innovation, see Mahoney and Thelen (2009).

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Reform operates within and across social networks. A social network model specifies links (communications, relationships, or exchanges) among multiple agents (nodes). Some individuals are well connected; others less so. Some individuals, *innovators*, create new ideas or practices. Others, *early-adopters*, embrace innovation if a small number (or proportion) of friends, acquaintances, or colleagues do so first. *Late-adopters* join in only if many others—i.e., a critical mass—do so first. *Inert* players resist adoption.

Information cascades arise when a few well-placed innovators, with a corresponding set of early-adopters—at least several of whom are well positioned within relevant a network sub-region—induce widespread imitation. When rates of adoption crosses relevant critical-mass thresholds for late-adopters in several network regions, new ideas or practices spread rapidly.[44] For example, the collapse of Lehman Brothers on September 15, 2008, initiated panic in US and global financial markets. Likewise, prior to their arrival in New York on February 7, 1964, the British rock band the Beatles was little known in the United States, but within weeks US teenagers—like those in Britain—had succumbed to Beatlemania (Gould 2007).

Lohamnn's (2000) model of collective-action cascades can describe punctuation events. Recall that Lohmann envisions a multi-period game among imperfectly informed heterogeneous individuals, arranged along a spectrum of attitudes towards the current regime (negative to positive). At the beginning of each period, all players observe last period's total participation in reform activity, and each receives a private signal concerning the state of the regime, good or bad, where the probability of receiving "good" depends on a player's location on the spectrum. Each player then decides whether to participate in opposition during the period. If actual

[44] Network position reflects key network properties, such as the degree of a node and measures of betweenness. A version of Figure 2 (with n = the number of reference participants who adopt) could specify adoption thresholds for various groupings of early- and late-adopters.

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participation exceeds expected participation, some agents reevaluate their understandings of the regime and the associated net benefits from opposition. Participation increases. A sufficiently long sequence of such occurrences can generate an information cascade of opposition.

The logic of information cascades can now apply to the typology of agents. Open activists (OAs) are innovators. Hidden activists (HAs) hide their opposition until the right moment arises; they act as early-adopters.[45] Opportunists (OPs) wait for large shifts: they are late-adopters. Both types of beneficiaries (PBs and SBs; for simplicity, BNs) act as inert players (they never adopt).[46] The boundaries between the types shift over time, as changing participation signals changing perceptions.

Table 3 illustrates this adjusted typology delineated across a spectrum of preferences for a (prototypical) stable phase and for pre-punctuation. The bottom row shows an $n*$ threshold for an appropriate version of Figure 2. During the stable phase, the sum of OAs and HAs lies below n*, but shifting signals can move the boundaries. At pre-punctuation, this sum crosses the $n*$ threshold. If a large enough proportion of HAs then receive a bad signal, as in the case of a focusing event, an information cascade of participation punctuates the prior social equilibrium.

Table 3: Player Types, Cycle Stages, and Cascade Thresholds

Stable (average)	OAs	HAs	OPs	BNs
Pre-Punct	OAs	HAs	OPs	BNs
n from Figure 2	Below $n*$		Above $n*$	

Information cascades may then quickly (all-be-it temporarily) resolve enormous second-order CAPs that usually inhibit coordinated belief in the possibility of reform and, by extension,

[45] HAs act as Lohmann's (2000) *activist moderates*: they participate in period t if their private information implies a bad state: quiescence would yield a net loss. OPs act as *apathetic moderates*; given prior observations and private information, they not currently participate, but may do so later if opposition exceeds expectations.
[46] A slightly more complicated scheme would allow PBs to become OPs after sufficient disjuncture.

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coordinated opposition activity. Alert, organized, and adaptable opposition coalitions may then instigate radical reform.

Reenter Power and Structure

An implicit assumption of equal power underlies Figure 2's multiplayer model as discussed so far and may even appear to apply to information cascades. Yet the earlier concepts of information, subsystems, resource access, and institutional positions all imply considerable power asymmetry. There are several avenues for merging these perspectives.

At a simple level, versions of Figure 2 can apply only to "the masses," so that group N excludes important members of the DC, leaders of oppositional coalitions, and well-positioned hidden activists. In this scenario, activist leaders cannot succeed without first crossing an n^* threshold of mass participation. An information cascade can precipitate such a crossing.

A more nuanced version (already implied by the networks that underlie information cascades) can retain a "masses" interpretation of Figure 2, but explicitly consider how network position confers power asymmetry. In particular, various measures of *betweenness* among nodes can signify different degrees of influence over flows of information, interpretations, actions, and even cognitive frameworks.[47] Relevant network positions, in turn, depend on institutional designation within policy subsystems, on unequal (and shifting) access to resources, and on prior resolution of organizational CAPs. Such relationships structure the conduits of influence within networks. Thus, even with roughly equal power among the masses in Figure 2, the potential crossing its n^* threshold operates in the context unequally distributed power within relevant networks. Well-positioned HAs, for example, might shift to open opposition when they observe

[47] On network betweenness, see Jackson (2008); on betweenness and power, see Ferguson (2013).

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conditions that appear to favor exercising their influence.[48] Their actions may then alter others' perceptions of the net benefits to opposition in a manner that crosses thresholds for late adopters. Absent unequal network positions and associated links, a cascade would not occur.

Finally, a modified Figure 2 can itself represent unequal power. Distinct players (individual *ns*) could occupy varying distances (intervals) along the horizontal axis. Greater length signifies more power. Power relationships can then shape both network transmission and mass reaction, as individuals respond to structured flows of information and influence.

IV. Conclusion

This paper utilizes a punctuated equilibrium institutional dynamic, with partially endogenous punctuation, to construct a conceptual framework for analyzing processes of radical reform, specifically from the point of view of activists. Potential activists face a vast series of first- and second-order collective-action problems. In order to motivate participation in reform activity, they must counteract substantial first-order CAPs of free-riding on others' efforts and risk-taking, and they must overcome second-order CAPs of orchestrating credible coordination and enforcement of myriad agreements and arrangements. The second-order CAPs, moreover, possess expectational dimensions that condition participation proclivities. Additionally, opposition from dominant coalitions—whose positions within meso-level policy subsystems reflect economies of information processing and power asymmetries—complicates resolution. Institutional complementarity within institutional systems poses further, macro-level, hurdles.

Even so, gradual processes of institutional change—that is institutional drift, layering and conversion—can alter distributions of resources (shifting de facto power) and reduce the viability

[48] Francisco Madero, a wealthy descendant of Spanish colonialists whose family had links to the Diaz regime, became a major leader of the Mexican Revolution in 1910 (Skidmore and Smith 2005).

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of institutionally designated positions (forms of de jure power). These changes—sometimes unanticipated outcomes of incremental reform—can simultaneously undermine the legitimacy of status quo institutions. Associated disjunctures render institutional systems vulnerable to punctuation. A sufficient internally or externally induced focusing event may then precipitate an information cascade of opposition (a wave of criticism) across a vast social network. As second-order expectational CAPs practically vanish, cascades of rising participation signify simultaneous (though rarely well planned) resolution of first-order CAPs of motivating activity. Ensuing punctuation then creates a window of opportunity for activists. An alert, organized, and adaptive oppositional coalition—one that can resolve a new set of second- and first-order CAPs—can, via a mix of organizing and seizing opportunity, initiate radical reform. Even so, implementation of radical reform presents another large set of collective-action problems, as dramatically illustrated by recent developments in Egypt and Libya. Discussion of implementation, however, awaits a future paper. In the meantime, the proposed framework can spawn an array of more specific theoretical models, focused on elements of reform processes, and a host of accompanying empirical hypotheses.

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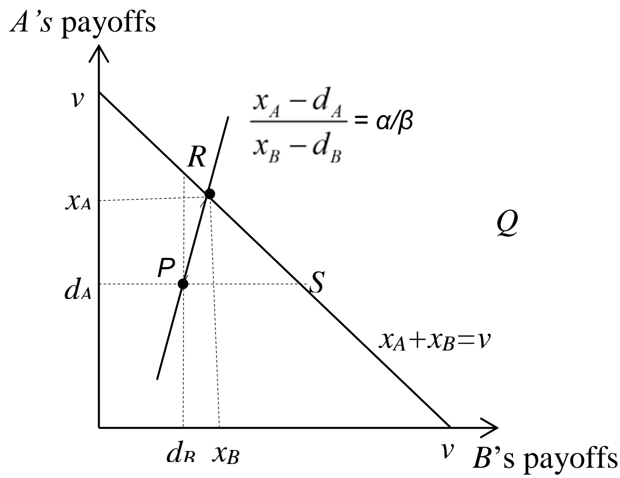
APPENDIX

Figure 3: Nash Cooperative Bargaining Model



Legend: A = dominant coalition; B = opposition; x_i: negotiated outcome for *i*; d_i: fallback positions; $x_i - d_i$: *i*'s share of the surplus; *α/β*: A's relative bargaining power (power1); segment *vv*: all possible efficient outcomes; segment RS: range of efficient negotiated outcomes.

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