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Connecting models of the individual and policy change processes: a research agenda.

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Introduction

The study of policy change has a rich history in policy studies, stemming from an ongoing interest in identifying the processes by which ideas, interests, and institutions can influence policy outcomes (Simeon 1976, Lindblom 1979, March and Olsen 1996). As attention within comparative political science has turned increasingly toward causal processes to "open the black box between inputs and outcomes" (Falleti and Lynch 2009: 1145), so too have policy process theories expanded to incorporate a wide variety of mechanisms from policy-oriented learning, emulation, serial processing, interpretive feedbacks, and framing, to name a few (Nowlin 2011; Kay and Baker 2015). Yet despite the depth of scholarship within policy studies in generating plausible collective processes of policy change, beyond bounded rationality, policy process scholars have underspecified an underlying model of the individual (Heikkila and Cairney 2017; Schlager 2007; John 2017).

Following a recent call in *Policy Sciences* to improve models of choice in policy process theories (Cairney and Weible 2017) we present an analytical framework to assist researchers in better specifying the individual logic of action underpinning different causal processes of policy change. One of the core strengths of policy sciences has been the attempt to pursue micro-macro linkages by integrating both behavioural and institutional approaches to examine the role of bounded rationality and decision making in the study of policy change (Jones 2017). Nevertheless, some policy process theories are explicit in identifying the individual determinants of choice driving policy change (Baumgartner and Jones 2012), while in others the model of the individual is under-defined or less explicit (Heikkila and Cairney 2017). Although these differences are understandable given various ontological roots and analytical foci, we propose that a fruitful way forward for theory generation is to more fully specify models of individual choice.

Building on Ostrom's (2011) distinction between frameworks, theories, and models, we contend that more nuanced models of individual choice can assist researchers in theorizing the connections between policy context and policy change (Cairney and Weible 2017, Jones 2017). Although parsimonious explanations are often difficult to derive in cases where decision making occurs over time and involves multiple actors (John 2003), we suggest that in some instances policy scholars should be able to identify a prime pathway at play. Indeed, we argue that in some cases, collecting evidence regarding individual choice can support the presence or absence of causal processes functioning at the collective level, such as policy-oriented learning or interpretative policy feedbacks. Evidence gathered at the individual level can thus help researchers assess the explanatory power of different pathways in a particular case, ultimately providing an avenue toward developing and adjudicating between competing theories of policy change.

This paper probes the plausibility of our approach by interrogating the case of renewable energy policy. Policy making regarding wind siting –and the public opposition that often arises – is a case that has been richly documented across the United States, Canada, and the United Kingdom (Stokes 2013; 2016; Rowlands 2007; Bell et al., 2005; Devine-Wright and Howes 2010; Jones and Eiser 2009; Hindmarsh and Matthews 2008; Phadke 2010), but which has been much more difficult to analyze. Researchers have offered multiple interpretations of the same phenomenon,

explaining policy change as the result of policy learning on the part of policy makers in the face of scientific information (McRobert et al. 2016), the framing of the policy problem (Rowlands 2007), and the mobilization of coalitions regarding perceived costs (Fast et al. 2016), among others. As a case in which adjudication between causal processes is challenging, wind siting provides a fruitful testing ground for an approach that attends to both policy context and individual choice.

The article proceeds in the following way. First, we make the case for attending to the model of the individual in the policy process, discerning the characteristics of individual choice that are sometimes explicitly and other times only implicitly identified in the policy process literature. We review scholarship on four established policy theories: the multiple streams framework (MSF), the advocacy coalition framework (ACF), punctuated equilibrium theory (PET), and policy feedback theory (PFT). Drawing on Parsons (2007), we propose that different models of the individual underpinning theories of policy change can be mapped along two key dimensions: 1) from the general to the particular and 2) logics of position or interpretation. Second, building on theories of policy change identified, we propose five potential non-exhaustive pathways to policy change. Each pathway links a model of the individual with a process of policy change at the collective level. Third, the article illustrates the advantages of our approach by examining case of wind power generation in Ontario, Canada. The case analysis demonstrates the utility of our approach in generating more robust research on processes of policy change. We conclude with a discussion of the implications of our analytical approach for future research on mechanisms in policy process theories.

Models of the Individual in Policy Process Theories

At the heart of much of policy process theory are a multitude of policy actors, all of whom are engaged in a variety of decisions at any given time (Cairney and Weible 2017). Whether implicitly or explicitly stated, at the core of many policy theories is the "art of the choice," namely the "relationship between (a) the ways in which people set policy goals, including the role of irrationality in their mental calculus, and (b) their context, which they only partly understand and influence" (Cairney and Weible 2017: 623).

There is a general consensus among policy process scholars that the classic model of comprehensive rationality in which an actor's preferences are exogenously determined and stable across all contexts is rarely observed empirically (Forester 1984; Jones 2017). Scholars note that limitations of time, resources, and cognitive abilities have significant influence on decision making, highlighting the importance of "informational shortcuts and other heuristics or emotional cues" in shaping decision makers' perceptions (Cairney and Heikkila, 2014). A combination of external and internal factors affects how decision makers process information. In Simon's (1985) work on the subject, for example, he draws on findings from cognitive psychology to stress that while individuals are goal following, or intendedly rational (Jones 1999, 2001), they are nevertheless constrained by problems of attention, uncertainty, and framing and thus adopt satisficing strategies over optimizing in decision making. Despite these broad themes, however, current policy process theories vary according to the model of the individual, in particular with regard to the influence of internal and external factors, and the degree to which we can develop predictive models of choice.

To identify different models of the individual present in policy process theories, we review recent scholarship within four different policy process theory traditions: 1) the multiple streams framework (MSF); 2) the advocacy coalition framework (ACF); 3) punctuated equilibrium theory (PET); and 4) policy feedback theory (PFT).[1] To map the nuances between different models of the individual in these policy process theories, we follow the work of Parsons (2007) in classifying core arguments in political science along two continuums.

Table 1 provides Parsons fundamental argument. First, Parsons distinguishes between general and particular models of individual behaviour. General models of choice presume that the drivers of choice "follow from given conditions in the environment or their brains" (2007: 13). In effect, general models assume that causes are exogenous to individual choice and the dimensions of choice will hold constant across a variety of actors and policy areas. In comparison, particular models are attentive to the contingent nature of individual action and presume that the specificity of context, whether ideational or institutional, guides the construction of meaning and choice.

Second, we can distinguish between models of the individual in which the drivers of choice are rooted primarily in actors' *position* in the environment versus their *interpretation* of the environment. For Parsons (2007, 13), position-type arguments describe "the landscape around someone" showing "how an obstacle course of material or man-made [sic] constraints and incentives channels her certain actions." These accounts assume strategic rationality, where behaviour can be explained by reference to external material or structural conditions in the environment. On the other hand, an interpretation-based argument refers to how "someone arrives at an action only through one interpretation of what is possible and/or desirable" (Parsons 2007:13). This implies a more complex decision making process influenced by factors internal to the individual. Actors' interpretation of the environment is filtered through conscious or unconscious cognitive structures, including existing deep core beliefs, principles, and values and patterns of cognition such as cognitive biases.

From these two dimensions, Parsons develops a four part typology of explanations of action in political science – structural, institutional, psychological, and ideational. Table 1 illustrates this matrix, outlining the four quadrants of action.

Table 1: Parson's fundamental matrix of explanations of action

Dimensions	General	Particular
Position	Structural (Quadrant 1)	Institutional (Quadrant 2)
Interpretation	Psychological (Quadrant 4)	Ideational (Quadrant 3)

Parsons (2007: 15).

We suggest that Parsons' framework, while developed to categorize broad arguments in political science, also provides analytic clarity with regard to models of the individual in policy process theories. Parsons' framework suggests that we can distinguish between theories that presume that choice is driven by a change in material and institutional structures and theories that focus on the influence of internal factors such as emotion or cognitive heuristics on individual action. This distinction is valuable in that it can help researchers identify necessary conditions for a particular individual choice, and to gather empirical evidence accordingly.

Comparably, Parsons' distinction between general and particular helps distinguish which theories provide a model that has predictive or explanatory power in a variety of policy contexts, and which are likely to be context specific. By better specifying the nuances between the models of the individual in policy process theories, policy researchers are thus better able to identify policy theories which fit the empirical phenomena under study. The following analysis maps models of individual in the selected policy process theories against Parsons' matrix.

As noted by Jones (2017), very few models of the individual in policy theories presume comprehensive rationality; indeed, many foundational works in the field identify environmental and cognitive limitations on goal seeking behaviour. Few policy theories presume that material conditions are the single driver of individual choice, replicable across a variety of contexts and as such it is rare for the model of the individual in process theories to fall into quadrant 1. Instead, we locate the models of the individual in the policy process theories we examine into quadrants 2, 3, and 4.

Quadrant 2: Particular models of choice determined by an individual's position in the environment.

The multiple streams framework, famously developed by Kingdon (1984) provides one of the most enduring metaphors of the policy process,[2] although defenders of the framework have also highlighted some of the causal theory underpinning the framework (Zahariadis 2014). The framework focuses on decision making under conditions of ambiguity and limited attention (Zahariadis 2014:25), giving particular focus to the role of policy entrepreneurs and policy communities, and the ties or networks necessary to bring about policy change.

Zahariadas (2014:27-28) argues that the decision model underpinning this framework is not one of rationality, stressing that decision makers operate under conditions of limited attention and lack of time, making comprehensively rational decisions unlikely. Policy decision makers, for example, government officials, in the framework are constrained; however, it is not entirely clear how these limitations shape their decisions, whether through satisficing behavior (Simon 1985; Lindblom 1979), or through cognitive mistakes in reasoning (Tversky and Kahneman 1981).

The focus on timing and windows of opportunity in MSF seem to imply a decision making process where external forces, including randomness or chance (John 2003), act as the most important constraint. Policy entrepreneurs, the key actors in the model, must wait for structural or other external factors to align to advance their goals. This suggests a different dynamic than other policy process theories such as punctuated equilibrium theory where decision makers' capacity to recognize such opportunities can be inhibited by limits to cognition. Although MSF identifies the role of limited attention, uncertainty, and ambiguity, these factors seem to be more important in influencing what strategies policy entrepreneurs undertake rather than constraining capacity to discern their interests. As such, although a case could be made that the model of the individual in the MSF should be categorized as stemming from a logic of interpretation, in practice studies applying MSF tend to assume that policy entrepreneurs make choices based on fixed preferences that are determined by their particular institutional position within a policy

subsystem, preferences that drive their strategic behaviour, placing the MSF mostly in quadrant 2.[3]

We suggest that the model of the individual underpinning "resource and incentive effects" in policy feedback theory (Pierson 1993) also falls in mostly in quadrant 2. Policy feedback scholars explore the ways in which previous policies restructure material and political conditions for elites, interest groups, and mass publics, influencing preference formation. As Mettler and SoRelle (2014:151) describe it, policy feedback effects explain how "policies enacted previously reconfigure the political landscape [...] and these transformed circumstances affect whether and how policymaking occurs later on." According to this perspective, the distribution of political power within a policy subsystem is historically constituted and reinforced over time.

According to Pierson (1993), policy change can be driven by resource and incentive effects which demonstrate how existing policies influence actors' material position and power-resources. Various scholars have shown how the design of policies prompt corresponding shifts in the political behaviour of different target groups, such as seniors, veterans, and social assistance recipients. Two pathways have been primarily identified by feedback scholars. First, policies can alter the distribution of politically relevant resources, such as time, by shaping the citizens' capacity to participate in politics. Second, policies can shape individuals' capacity to recognize their common material interests, making it easier for interest groups to mobilize these actors. In the case of seniors in the United States, for example, the Social Security program made it much easier for the American Association of Retired Persons to mobilize seniors as political group (Campbell 2012). The assumption is that these policy feedback processes shape the prospects of policy change. By shaping target groups' relative political power, policy feedbacks shape the policy alternatives available to elected officials. In cases where policy designs reinforce the political power of mobilized and politically astute constituencies such as seniors, policymakers have limited incentives to challenge these groups. In cases where policy designs undermine citizens' efficacy and political power, for example social assistance recipients, policy arrangements are much more vulnerable to change. Although structural or rationalist accounts restrict focus on elected officials' goals and incentives, policy feedback scholarship explores the causal process undergirding these incentive structures, linking actors' goals to legacies of policy designs. As such, we consider the model of the individual underpinning the resource effects mechanism of policy feedback theory as primarily in quadrant 2.

Quadrant 3: Particular models of choice determined by an individual's interpretation of the environment.

Arguably one of the core contributions of the advocacy coalition framework (ACF) has been to theorize the values, beliefs, and identities on the choice and actions of individual coalition members, placing the ACF firmly within quadrant 3 (Sabatier 1988; Sabatier and Weible 2007; Jenkins-Smith et al. 2014). These beliefs guide coalition members' *interpretation* of the policy context and their subsequent goals for political action. The ACF highlights the role of shared policy beliefs in driving collective action at the policy subsystem level. ACF posits that subsystems can be understood by aggregating actors into competing coalitions. The beliefs of a "winning" coalition are expressed in government policy outputs, including policy goals and preferred policy instruments (Weible and Nohrstedt 2012). Actors' preferences within coalitions

reflect three tiers of beliefs: deep core beliefs, policy core beliefs, and secondary beliefs. Deep core beliefs consist of normative values which are applicable across different policy areas and are considered to be relatively stable over time. Policy core beliefs include both empirical causal beliefs about the causes of the policy problem and normative beliefs (Jenkins-Smith et al. 2014). Secondary beliefs refer to preferred means or strategies for achieving policy goals, such as a particular policy option in a given case (Rietig 2016). A key step in identifying policy change in a particular subsystem is to determine the actors involved in each advocacy coalition by identifying these three types of beliefs.

Recent reviews of ACF (Cairney and Heikkila 2014; Jenkins-Smith et al. 2014; Weible et al. 2011) have identified bounded rationality as a core assumption of the framework, arguing that individuals in ACF are goal oriented and instrumentally motivated but are subject to cognitive limitations. Researchers in the ACF tradition assert the influence of values and ideas (Jenkins-Smith et al. 2014), finding that although actors are able pursue collective action, their preferences are likely guided by different types of beliefs, some of which are much more durable than others. Findings suggest that although actors within coalitions may adapt and change their secondary beliefs, movement on core beliefs is much more unlikely.

A key individual level innovation of the ACF has been to document the preponderance of the "devil shift" where coalition members demonize their opponents, limiting the potential for policy change through inter-coalition learning. More recently ACF scholars have aimed to better specify the drivers of core beliefs, drawing on grid-group cultural theory to put forward more coherent measures of deeply held ideas about the role of authority and how best to organize society (Jenkins-Smith et al. 2014). We suggest that although there is potential in the ACF to examine the impact of cognitive factors that hold across a variety of contexts or individuals, as indicated by the commitment to bounded rationality, the role of unconscious cognition processes such as heuristics or serial processing have not been explored in theory building, and as such we situate the ACF in quadrant 3.

In a similar vein, an underdeveloped, but promising avenue of policy feedback scholarship has been to examine the influence of "interpretative effects" on the political behaviour of mass publics (Pierson 1993). Interpretive effects is a term used in policy feedback theory that refers to the effects on interpretation generated by changes to institutional structures and policy design and the corresponding change in actors' behaviour. Interpretative effects refer to the "impact of policies on the cognitive processes of social actors," including the production of cues that can help them "develop political identities, goals, and strategies" (Pierson 1993:610). In addition to shaping incentives and power-resources, policy designs can shape the ideas, perceptions and political identities of beneficiaries. For instance, the design of a policy can convey certain messages about political citizenship and place within the political community. In turn, this will affect citizens' sense of political efficacy and their willingness to engage in politics (Weaver and Lerman 2010). In addition, Mettler (2002) illustrates how policy designs can help construct new norms among constituencies. In her analysis of the influence of the US GI bill, *The Servicemen's Readjustment Act, 1944*, Mettler finds that the educational benefits of the policy helped instill a norm of reciprocity among veterans. Being provided with these policy benefits resulted in veterans' feeling a moral obligation to give back to the political community. These findings suggest that policy feedbacks do not always operate on a self- material or incentive-based level

(Campbell 2012). Although the model of the individual within PFT is underdeveloped, research suggests that interpretative policy feedbacks likely impact mass publics' interpretation of the environment through ideational factors, such as norms and political identities. This attention to the interaction between particular institutional contexts and individual's particular, internal conceptions of his or her identity suggests that the concept of interpretive effects fits within quadrant 3.

Quadrant 4: General models of choice determined by an individual's interpretation of the environment.

While ACF and policy feedback scholars have focused on the interpretive constraints on the political behaviour of coalition members and mass publics, punctuated equilibrium scholars focus on the ways in which *cognitive biases* drive actors' interpretations of the environment. The attention of theory to the influence of cognitive factors that hold across a variety of policy fields and institutional contexts places PET firmly into quadrant 4 of Parsons' matrix. PET scholars demonstrate how policy elites' susceptibility to attention drive actors' perceptions of policy problems and determine their capacity to respond to changes in environmental conditions, such as new harms or threats. In developing a model of policy making that explains both stable policy processes and the punctuation of standard policies through significant policy change PET scholars have specified bounded rationality as the micro-foundation of the theory (Jones 1999, 2001; Jones and Baumgartner 2005, 2012).

The major theoretical insight in PET scholarship is that policy decision makers are susceptible to "disproportionate information processing" where policy elites under-attend to a particular issue until their attention is captured by a crisis or focusing event, resulting in a cognitive over-correction where decision makers subsequently over-attend to the policy problem. As the theory has developed, the majority of analytical advances have focused on linking individual level models of decision making at the micro level with macro empirical analyses of system-wide punctuations (Baumgartner, Jones, and Mortensen 2014).

To summarize, models of the individual in policy process theories can be categorized according to core logic of action and whether the model of choice holds across a variety of institutional and structural contexts – namely whether it is generalizable or contingent. Table 2 summarizes our assessment of the policy process theories.

Table 2: Models of the Individual in Policy Process Theories

Dimensions	General	Particular
Position	Choice driven by preferences (Quadrant 1)	Choice driven by preferences (Quadrant 2) *policy entrepreneurs in multiple streams framework; resource and incentive effects in policy feedback theory*
Interpretation	Choice driven by attention (Quadrant 4) *disproportionate information processing in punctuated equilibrium theory*	Choice driven by values, identities, and beliefs (Quadrant 3) *tiered belief structure in advocacy coalition framework; interpretive effects in policy feedback theory*

We argue that these distinctions have significant repercussions for identifying which types of factors are more or less likely to be necessary for policy change. When choice is driven by logics-of-position, factors that change actors' material or institutional conditions are likely to drive a change in action. Examples of these factors include exogenous developments such as financial shocks to a polity or other changes to economic and social conditions that change the dynamics of a policy subsystem. More contingent institutional factors can also include changes to policies which re-shape the opportunities for interest groups to achieve their goals, such as public pension reform.

In contrast, when individual choice is driven by logics of interpretation, factors which influence actors' perceptions, attitudes, opinions, and cognitive failures are more likely to drive a change in action. Examples of these factors include policies which re-shape individuals' concepts of identity, policy framings that activate emotions, media debates that increase issue salience, and institutional conditions that increase the intensity of attention. Although mechanisms of disproportionate information processing are likely to hold across a variety of conditions, factors influencing individual core beliefs, values, emotions and identities are likely to be more contingent to particular contexts, and as such, less predictive.

Models of the Individual and Collective Processes of Policy Change in Policy Process Theories

Attention to the role and operation of causal processes in policy scholarship reflect a broader disciplinary effort in the social sciences to disentangle and better understand the nature of causality (For recent reviews, see Hedström and Ylikoski, 2010; Beach and Pederson 2016). We follow Gerring (2008:163), defining causal mechanisms as the processes by which "an effect is produced or a purpose is accomplished." Rather than merely illustrating patterns of correlation, attention to causal mechanisms has enabled social scientists to be much more precise about the

nature of causal relationships (George and Bennett 2010; Steinberg 2007). As McAdam, Tarrow and Tilly (2008:309) note, mechanistic explanations "specify what sort of event produces the correspondence between the presumed cause and the presumed effect." In doing so, mechanism-based approaches have allowed the field to move beyond making general claims about the influence of ideas, institutions and interests, and instead, showing how these "building blocks of politics matter" (Paquet and Broschek 2017: 298). Mechanistic explanations have also been shown to be particularly fruitful in testing the explanatory claims of mid-range theories (Tilly 2001; Hedström and Ylikoski 2010). By identifying scope conditions as well as combining inductive and deductive approaches to theory building, theories of the policy process fit into this category (Sabatier 2007).

Developing nuanced models of individual choice in policy process theories can help clarify the empirical presence or absence of processes of policy change. Without calling for a full-fledged turn to methodological individualism, we suggest that a closer attention to individual choice can help policy researchers wade through the complex nature of policy processes by more clearly identifying the key drivers, or at the very least necessary conditions for individual and collective action. One of the advantages of examining micro-level mechanisms – or what Checkel (2006: 363) terms "agent-to-agent" mechanisms – is that behaviour and agency are much easier to observe at this level of analysis (Biesbroek, Dupuis and Wellstead 2017: 67). Since mechanisms are responsible for generating causal effects, scholars looking for their presence (or absence) should be able to assess whether the individual actors exhibit the pattern of behaviour that is consistent with the proposed mechanism. Studying how the behaviour of individual actors shifts over time can provide an important source of leverage in empirical analysis (Grzymala-Busse 2011). This does not mean limiting attention to processes at the individual level. Mechanisms explaining political phenomena, including processes of policy change (Kay and Baker 2015) can also operate at the meso and structural level (Tilley 2001; Faletti and Lynch 2009). The ACF is an example of a theory that attempts to combine mechanisms at the individual, collective, and macro level of analysis (Kay and Baker 2015).

We contend that all policy process theories would benefit from being more precise about the underlying model of the individual. As we illustrate below, this approach can provide greater analytic clarity, allowing scholars to distil the operative causal process in empirical analysis. Building on Table 2, we identify five potential, non-exhaustive pathways to policy change identified in the literature. Each pathway links a necessary condition, such as changes in the economy, with a change in an individual's choice architecture, such as a change in preferences, and a corresponding causal process of policy change, often at the collective level, such as a change in coalition resources. Figure 1 provides an overview of these five pathways. We stress that this model illustrates a range of possible pathways of change identified within the policy process theories reviewed; these pathways are not exclusive of all the potential theories of policy change, but instead demonstrate the applicability of our framework.

An important caveat to the discussion of causal processes is to stress that mechanisms are "unobserved analytical constructs … that provide hypothetical links between observable events" (Hedstrom and Sweberg 1998, 13). Although experimental approaches may move us closer, fundamentally the mechanisms that link necessary conditions with individual changes and subsequent individual behaviour with collective level change cannot be directly observed. As

such, we propose that seeking alignment between individual and collective action is a step towards theorizing the underlying mechanisms that link micro-macro change.

Figure 1: Pathways to policy change
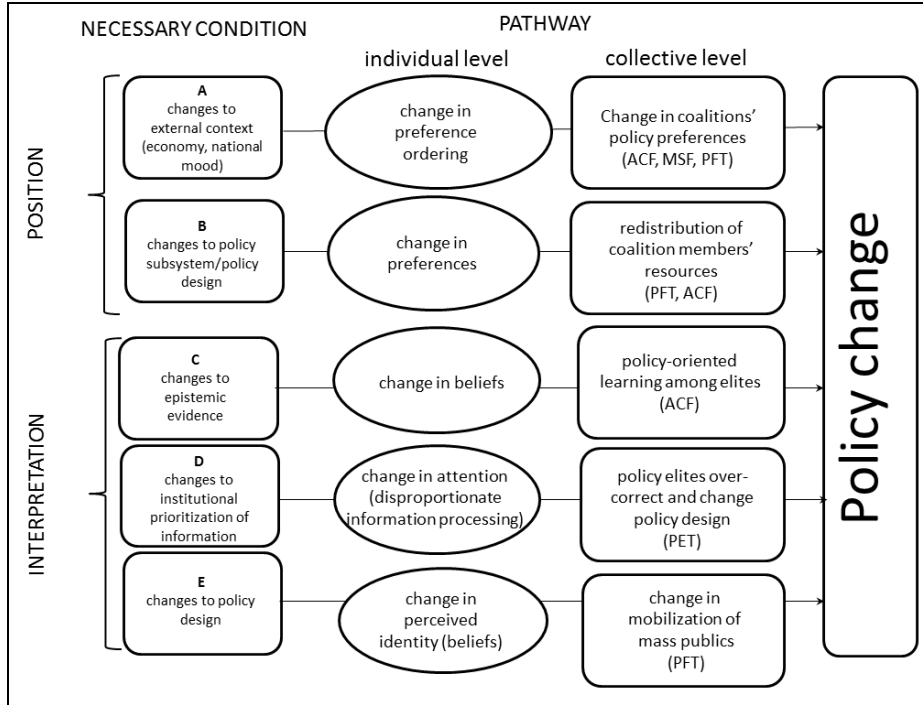
The first two pathways identified as causally relevant by multiple streams theory, the advocacy coalition framework, and policy feedback theory is when factors *shift actors' position in the environment,* either by changing political and economic conditions (pathway A) or reshaping the form of coalitions within policy subsystems (pathway B). Actors are presumed to be able to engage in goal seeking utility maximizing behavior to achieve their preferred policies. Environmental changes prompt actors to reorder their priorities, resulting in alternative policy decisions.

In the MSF, policy entrepreneurs take advantage of the opening of windows generated by new political conditions, external shocks, or cultural shifts to put forward their preferred policy options, convincing decision makers that new policies will address emerging problems. In the ACF, exogenous (either to the entire political system or internal to the policy subsystem) events redistribute coalition resources, driving coalition actors to act strategically to gather new actors to their cause. Similar to MSF, this pathway is driven primarily through changes to the policy context (Weible and Nohrstedt 2012). The implicit assumption is that external events change individuals' preferences, shifting their perceptions of their material interests at a given time.[4]

We suggest that a similar dynamic is at play with regard to the incentive and resource feedback effects identified by policy feedback theory. Existing accounts (e.g. Campbell 2003) illustrate the importance of structural-like casual mechanisms, such as material or incentive effects in influencing policy decisions. An existing policy arrangement distributes political power to

certain groups and incentivizes certain kinds of political action such as interest group mobilization that becomes "locked-in" over time. Major structural or material changes, however, including elections, can induce shifts in the preferences and/or resources of the coalition, helping explain why stable policy arrangements suddenly become dislodged. Exogenous shocks, then, can shift the preferences and strategies of individual actors within institutions, increasing the prospect of policy change.

The next three pathways to policy change identified by the advocacy coalition framework, punctuated equilibrium theory and policy feedback theory, stress that factors can *shift actors' interpretation of their environment*. Instead of changing the environment directly, these factors change how actors perceive the environment, in effect changing *how they see* rather than *what they see*. In these pathways, material changes to the environment may be less necessary than changes to the presentation and construction of information.

First, policy-oriented learning (pathway C) can lead to a gradual change in actors' secondary or policy core beliefs, reflected in changes in government policies (Jenkins-Smith et al. 2014; Heikkila et al. 2014; Heikkila and Gerlak 2013). ACF studies have confirmed the proposition that intra-coalition learning is more likely under high levels of inter-coalition conflict, although intermediate levels of inter-coalition conflict can lead to learning across coalitions (Weible 2008). These findings demonstrate the importance of interpretive pathways. On the one hand, the focus on ideational exchanges within and among coalitions illustrates the inertia generated by deep core beliefs as actors across coalitions are more likely to entrench around a particular principled belief, resistant to change. At the same time, through the presentation of new scientific evidence, over time, some actors may be persuaded to adopt new views, at least with regard to secondary beliefs regarding policy instruments and settings (Rietig, 2016). ACF scholarship thus suggests that decision making guided by values is quite durable and resistant to change. Although actors' material interests can shift according to large external shocks, cognitive bounds based on beliefs can only be changed very slowly over time through an iterative process of learning, usually dependent upon the introduction of new information or evidence within the coalition. New scientific information that does not unduly challenge actors' deep core beliefs may still serve to shift actors' secondary beliefs about effective policy options, leading to a change in adopted policy instruments and settings (Rietig 2016).

Second, PET scholars have put forward the analytical proposition that institutional friction triggers processes of disproportionate information processing (pathway D), prompting radical policy change (Jones and Baumgartner 2012). The core hypothesis is that institutions such as federalism generate stability, expressed through negative feedbacks, which prevent decision makers from attending proportionately to signals generated from the environment (Jones et al. 2009). Bounded by institutional and cognitive norms, decision makers are disproportionately attentive to the status quo, ignoring or diminishing signals from competing interest groups or policy communities. Once the signal intensifies past a certain threshold, policy makers over-correct by disproportionately attending to the new signals, resulting in a policy punctuation, or paradigmatic change. Recent work by PET scholars suggests that different institutional arrangements, in particular the organization of information flows within a bureaucracy, can influence information processing in the policy subsystem, driving the attention of policy elites in particular ways (Workman, Jones, and Jochim 2009; Prindle 2012).

Third, policy feedback scholars have stressed that the mechanism of interpretive feedback effects can prompt policy change by guiding and shaping the preferences of mass publics (pathway E).[5] Scholars have begun to identify how policy feedbacks interact with the broader institutional and ideational context of decision making (Jacobs and Weaver 2015; Skogstad 2017). Moreover, interest in policy feedback effects, particularly at the mass level, has proliferated in recent years. Through case study and survey research, scholars have illustrated policy feedback effects across a variety of different contexts and policy areas, including social security (A. L. Campbell 2003), health care (Hacker 2002), social assistance (Soss 1999; Soss and Schram 2007), citizenship (Uggen and Manza 2002), and criminal justice (Weaver and Lerman 2010). Although scholarship on the causal processes underpinning interpretive feedbacks is still emerging, we hypothesize that a plausible pathway is that particular policy designs can redefine policy problems, resulting in new frames that transform the attitudes and identities of citizens, inducing them to accept previously untenable policies or to reject policies that had been historically supported.

To summarize, our analytical framework draws on policy process theories to identify the links between necessary conditions of policy change and individual and collective processes of change. We contend that organizing policy process theories in this manner helps scholars identify the necessary information and evidence required to demonstrate the relationship between causal processes and outcomes in a given case. Scholars working on interest-based accounts (PFT, MSF) thus have to demonstrate that the timing of external or internal events led to a restructuring of actors' material interests, leading to a reordering of coalitions' resources or preferences. Researchers focusing on policy learning (ACF) must document both the emergence of new epistemic or scientific information and that policy decision makers relied on this new information to change instrument settings or select new policy instruments. In contrast, scholars working within the guidelines of punctuated equilibrium theory need to document both the change to institutional prioritization of information in response to focusing events – such as shifts in decision making responsibility from line departments to centralized ministries, as well as providing evidence policy elites over-attended to an issue after this institutional change. Finally, policy feedback scholars working on interpretive feedback effects must demonstrate that changes to policy design serve to change or reinforce the identities and perceptions of mass publics, prompting action.

Illustrative Case: Wind Siting in Ontario 2004 – 2013

To illustrate the value of this approach, we turn to the puzzling case of wind siting in Ontario, Canada. In 2004, the Ontario government embarked on a ten year phase-out of coal-fired electricity (Stokes 2013: 492). To replace that energy source, the government decided to increase the province's share of renewable energy sources, embarking on a renewable portfolio standard in 2003 and the introduction of a feed in tariff (FIT) program in 2006 (Rowlands 2007; Stokes 2013). The government substantially expanded the renewable energy development program with the passing of the Green Energy and Green Economy Act (GEGEA) in 2009 (Stokes 2013: 493; Hill and Knott 2010). In an effort to speed project development and to reduce financial risks from project delays, the GEGEA allowed developments to connect to the grid directly, and removed municipal jurisdiction over siting (Hill and Knott 2010: 153; Stokes 2013: 493). But

those efforts to speed project development resulted in the mobilization of opposition groups including Wind Concerns Ontario that managed to establish over 50 local chapters (Stokes, 2013: 495).

The opposition and negative media attention (Hill and Knott, 2010:154) was so effective that by 2012, the Ontario Federation of Agriculture, which was previously supportive of wind energy development, called for a moratorium on new development. In 2012 the provincial government overhauled the design of the program, adjusting rates and prioritizing projects with municipal support in an effort to gain buy-in from local communities. Throughout 2013, 80 different municipalities passed "unwilling host" resolutions signalling their lack of support for wind projects and in 2013 the provincial government scrapped the FIT program (Fast et al. 2016:3). The case thus presents three instances of policy change: introduction of the policy in 2009; the program overhaul in 2012; and the cessation of the program in 2013.

Drawing on our analytical framework, we contend that there is evidence to support four different processes of collective policy change: changes in coalition' preferences (pathway A); changes to coalition resources (pathway B); policy-oriented learning (pathway C)); and interpretive policy feedbacks (pathway E). The discussion below reviews the presence of necessary conditions, and causal processes at play in the case with close attention to the role of individual choice.

Pathway A: Changes to coalition preferences
Policy scholars studying the Ontario case have identified the 2008 recession as a significant factor in determining the incentives of the provincial government to pursue renewable energy development. In the context of a faltering economy, the program provided the government with an opportunity to engage in a new industrial strategy to create employment and to address projected shortfalls in provincial energy supply (McRobert et al. 2016; Stokes 2013). This shift in the province's macro economy changed actors' incentives in two ways. First, government and labour elites became focused on developing a program which would rapidly scale up renewable energy development in order to meet the twin goals of job creation and electricity production (Stokes 2013). For example, Stokes (2013) finds that the United Steelworkers Union representatives engaged in policy formulation were influential in determining that domestic requirements were incorporated into policy design. At a more basic level, the design of the GEGEA was focused on reducing externalities for renewable energy development by setting a fixed price for energy and ensuring connection to the grid (Stokes 2013; Fast et al. 2016).

Second, energy proponents saw an opportunity to streamline approvals processes by removing municipal oversight and narrowing the scope of the appeals process, both of which had served to stymie other industrial siting projects in the region (McRobert et al. 2016). The decision to centralize planning at the provincial level was driven by policy elites' attempts, including Premier McGuinty, to neutralize "Not-In-My-Backyard" (NIMBY) resistance by local communities (McRobert et al. 2016; Walker et al. 2014; Fast et al. 2016; Baxter et al. 2013). The case thus illustrates the ways in which material constraints can reorder the incentives of various actors in the policy subsystem, influencing the positions of industry, labour, and government representatives engaged in policy formulation. As such, the case demonstrates the applicability of pathways to change based on changes to actors' position in the environment as described by multiple streams and resource feedback effects scholars.

Pathway B: Changes to coalition resources post GEGEA implementation
The implementation of the renewable energy program fundamentally restructured the economic conditions of the policy subsystem, changing actors' incentives and redistributing coalition resources. The GEGEA created distinct energy policy winners and losers. On the one hand, the GEGEA undeniably benefited renewable energy proponents and farmers leasing land for development, creating a new coalition of policy supporters; Fast et al. (2016) report that leases range from $5,000 - $15,000 CDN annually. Program supporters also included community members who perceived indirect benefits for the community, including their neighbours' economic fortunes (Walker et al. 2014). On the other hand, the rapid scaling up of development also created policy losers amongst residents fearing reduced property values (Baxter et al. 2013) or who perceived payments from energy proponents as a bribe rather than a genuine attempt to offset costs (Walker and Baxter 2017). Public opinion scholars have also documented evidence of place-based costs, as residents experienced concerns regarding aesthetic impacts and potential negative impacts on local tourism (Fast and Mabee 2015). Pathway B in our framework accounts for this process of change, suggesting that the material restructuring of the policy subsystem changed actors' preferences and motivated the development of new coalitions in support or in opposition to existing policy. Existing empirical research documents significant opposition to the GEGEA post implementation in 2009, evident in the rise of opposition groups such as Wind Concerns Ontario (Stokes 2016; Fast et al. 2016; McRobert 2016; Walker et al. 2014). Thus the change in actors' incentives mobilized rural residents to oppose the policy, leading to the loss of rural seats in the 2011 election (Stokes 2016). Local mobilization, together with the election results, shifted the preferences of policy elites, resulting in the 2012 adaptation of the policy to include additional incentives for community ownership, presumably in an attempt to mitigate public resistance (Fast et al. 2016). Thus the case demonstrates the applicability of both the internal events pathway in the advocacy coalition framework and policy feedback incentive/resource effects.

We contend however, that a closer attention to behaviour change at the individual level illuminates that changes to the material environment were not the only factors influencing policy change in this case. Indeed, the individual-level survey data suggests that although local residents are aware of economic costs and benefits, some residents are much more concerned with potential health risks stemming from wind turbines (Baxter et al. 2013; Walker et al 2014; Walker et al. 2015), a finding particular to the Ontario case that we discuss in more detail below (see pathway E).

Pathway C: Policy-oriented learning
There is some evidence to suggest that the pathway of policy learning was also at play in the creation of the GEGEA. A number of scholars have noted the influence of Germany's renewable energy development program on the design of the GEGEA, particularly with regard to the broad strokes of market creation (Fast et al. 2016; Stokes 2013; McRobert 2016). Nevertheless, based on existing evidence, it is challenging to ascertain the degree to which policy elites within government actually altered their causal beliefs about the efficacy of instruments and settings. Indeed, some scholars have argued that despite attempts to incentivize community ownership by including higher feed-in-rates for community and aboriginal-owned projects in the GEGEA, the

structure of the approvals process actually served to disproportionately benefit large multi-national wind proponents at a much higher rate than in the German case (Fast et al. 2016).

On the one hand, this failure could be because of unforeseen case-contingent factors; however it is also possible that instead of policy learning, policy elites were engaged in a more rapid and less integrated process of policy emulation. Although this concept is underdeveloped in the policy process theories examined above, findings from the policy diffusion literature suggests that following a focusing event, such as a major economic shift, policy elites may apply available policy instruments from other jurisdictions without tailoring policies to their own jurisdiction, resulting in increased possibilities for policy failure (Weyland 2005). Stokes' (2013) findings from process tracing and interviews support this analysis of the case, stressing the dominant role of the Ontario Sustainable Energy Association in developing draft policy that was largely adopted by the Ontario Ministry of Energy with limited revisions. The outsourcing of policy formulation to non-state actors and the rapid pace with which the recommendations were adopted (Stokes 2013) suggest that policy change in the case was less likely a result of belief change driven by policy-oriented learning as defined by the advocacy coalition framework and more likely to result from shifts in government officials' attention driven by processes of emulation.

Pathway E: Interpretive Policy Feedbacks post-GEGEA implementation

Some of the more interesting dimensions of the Ontario case are the unintended consequences of the centralization and streamlining of the approvals process at the provincial level. Research has documented significant lack of trust in government among residents stemming from the loss of control over planning and siting at the municipal level (Baxter et al. 2013; Fast and Mabee 2015). These perceptions of procedural unfairness persisted at the local level for several years and the government attempted to address these concerns by introducing the 2012 "willing host" requirement in order to facilitate community buy-in. Ironically, the policy design failed to mitigate feelings of distrust exacerbated by the loss of municipal jurisdiction over the planning process and served to spur a rash of municipal "unwilling host" resolutions in 2013 (Fast et al. 2016). Although these resolutions seem to be irrational on the material level by forgoing potential future development, from an interpretive perspective suggested by policy feedback theory, the largely symbolic actions of the municipal actors are easily explained by the interpretive influence of perceptions of fairness and trust at the individual level, which motivated municipal resistance to FIT despite material incentives tied to job creation and economic growth.

A parallel interpretive policy feedback evident in the case is the significant salience of risk perception regarding harms to human health generated by living in close proximity to wind turbines. In a distinct departure from the environmental science literature which finds limited evidence to support causal effect of wind turbines on human health (Berger et al. 2015; Knopper and Ollson 2011), public resistance to wind generation in Ontario has coalesced around health risks (Baxter et al. 2013; Walker et al. 2014, Walker et al. 2015; Fast and Mabee 2015; McRobert et al. 2016; Stoakes 2013; 2016; Fast et al. 2016). The prevalence of health risks in the Ontario context has prompted policy researchers to examine the unintended results of the design of the GEGEA, which narrowed grounds for appeal to "serious human health" and "serious and irreversible harms to plant life, animal life or the natural environment" (McRobert et al. 2016:

103). McRobert et al. (2016) argue that by limiting the ability of residents to object to energy approvals based on aesthetic or procedural grounds the GEGEA has inadvertently focused the attention of policy opponents on human health risks. At the very least, survey research has documented perceptions of negative health impacts related to noise and annoyance (Knoper and Ollson 2011); some psychosocial research extends this analysis to foreground the correlation between perception of health risks, intra-community conflict, and procedural fairness (Walker et al. 2015; Baxter et al. 2013). By including specific provisions about human health within the original legislation, the Ontario government unintendedly heightened the salience of this issue for these communities, and thereby provided opponents with a specific frame to rally around.

We contend that these findings provide evidence in the support of an interpretative policy feedback effect (pathway E). In short, changes to the GEGEA approvals process elicited new constructions of policy problems focused on human health. These health frames activated risk perceptions, affective responses, and identities at the individual level, mobilizing mass publics to resist policy implementation. Again, closer attention to individual behaviour could establish additional evidence in support of this hypothesis through population survey experiments testing the influence of different frame effects – for example frames focusing on health risks versus frames regarding procedural fairness. Moreover, although the literature on the Ontario case tends to assume that the subsequent scrapping of the FIT program in 2013 was because of the governments' revised assessment of political risks connected to policy implementation, interview data on this process is more limited. Additional research on elites' responses to public resistance to wind generation and the impact on future policy formulation would help identify the sequencing of causal processes in the case.

Discussion
This article suggests that policy researchers can deepen their understanding of the relationship between policy context, such as economic, institutional, and ideational elements, and policy outcomes by paying closer attention to various causal processes of policy change, including, but not limited to: changes to coalition resources, policy learning, and policy feedbacks. We contend that identifying and measuring shifts in individual behaviour enables researchers to generate strong empirical evidence in support of the presence (or absence of) these collective processes, a proposition that we illustrate in our analysis of Canadian provincial renewable energy policy.

Our analysis demonstrates that although policy elites and mobilized publics often act according to their interests determined by their position in the environment – constructed by perceived direct benefits of land leasing, job creation, or re-election for example – but sometimes they do not. Indeed, the findings from the Ontario case provide support for the burgeoning debate in environmental studies literature that public resistance to wind turbines has an interpretive dimension. As Fast and Mabee (2015) note, previous research has identified both place-based and trust-based dimensions of individual choice. Scholars such as Devine-Wright and Howes (2010) have identified "disruption of place-attachment" as a significant predictor of public opposition, as threats to physical and symbolic attributes of certain locations can activate residents' sense of rural identity in opposition to urban policy elites and energy proponents (271). Alternatively, opposition is also generated, as Phadke (2010: 5) argues, by a "low level of trust in administrative agencies and a latent suspicion as to whether the public has a meaningful role in decision making." In this case, documented reasons for public opposition centre less on

material costs and benefits and more on the public's perceptions of the legitimacy or lack thereof, of wind siting processes. Empirical examination of the Ontario case suggests that procedural concerns may also have an interactive effect with risk perception, as residents' perceptions of severity of harms correlated with perceptions of procedural unfairness.

We suggest that parsing out these ideational effects, both on the individual and collective levels, serves a practical and theoretical benefit. From a practical perspective, identifying the relative impact of attachments to place, trust in government, and risk perception on support for renewable energy provides guidance to policy elites hoping to mitigate public resistance to new technologies. Although scholars have posited that deliberative strategies such as collaborative planning, joint fact finding and deliberative polling can work to overcome public opposition (Bell et al., 2005: 468; Schenk and Stokes 2013; Howard 2015), other scholars have noted that public debate can also trigger values-based political conflict (Barry et al., 2008: 69). Policy makers aiming to implement wind siting with activated publics thus need to develop public communications strategies with rhetorical frames that activate positive heuristics (Barry et al., 2008) in addition to redesigning consultation practices.

From a theoretical perspective, we contend that tracing pathways of policy change at both the individual and collective level helps refine a policy process research agenda that better identifies 1) the relative explanatory power of different theories of policy change, 2) the role of sequencing and interactions between causal processes and 3) the presence of new mechanisms implicit but underdeveloped in existing policy process theories.

First, as the above analysis demonstrates, although four different pathways were at play in the case, the weight of evidence at the individual level supports the presence of interpretive feedback effects generated by policy design. Removing municipal jurisdiction and introducing health risks as grounds for appeal served to activate residents' core beliefs regarding trust in government, harms to human health, and threats to place, all of which coalesced in mobilization around rural identities and resistance to wind generation. Attention to the dynamics of choice at the individual level thus provides a richer and more robust account of how interpretive policy feedbacks influence policy outcomes.

Second, as the Ontario case suggests, the sequencing of processes of policy change matters. Arguably, the Ontario government's limited process of policy learning – perhaps better termed policy emulation – resulted in the implementation of an approvals process which generated significant negative interpretative externalities, exacerbating public opposition. A counter factual suggests that a more extensive process of policy learning might have led to policy design that better anticipated interpretive effects – for example either through designing a more extensive community consultation process or by enabling appeals on aesthetic or other place-based concerns. The case analysis demonstrates that one of the benefits in parsing out linkages between individual choice and collective action is to document the complexity of the policy process. As the case illustrates, policy elites can engage in processes of (bounded) learning to generate policy designs, which then activate mass publics' identities through heuristics or cues. The strength of policy process theories is that they can encompass this complexity, allowing for the probability that different actors are operating under different logics at different times. Indeed, a richer theorizing of the policy change emerges from this type of multi-faceted analysis.

Third, the application of our framework to the Ontario case illustrates that, despite the commitment of policy process scholars to the tenets of bounded rationality, fewer theorists have capitalized on implications of the role of beliefs, values, emotions and identities on individual choice by linking them to corresponding theories of policy change. As our case illustrates, policy process theories would benefit from an increased exploration of the interaction between political and economic crisis and processes of policy emulation on the one hand, and policy frame effects and mass public opinion on the other. Nuancing the model of the individual in policy process theories can also help us understand and perhaps even predict under what conditions different collective processes are more or less likely to occur. We have provided a framework for identifying common linkages between individual and collective change as a step toward theory generation regarding causal mechanisms in the policy process. The next stage is to further theorize the unobserved mechanisms that drive various connections between context, individual behaviour, and collective action, resulting in richer and more robust theories of policy change.

Conclusion
We contend that policy process theories would benefit from developing models of individual that move on from the general assumption of bounded rationality. Determining when individual choice is driven by incentive structures generated by particular external institutional conditions; when it is rooted in contingent and context specific core beliefs, values, and identities; and when it is guided by problems of cognition driven by attention, helps tease out the complexity of human choice. Specifying individual logics of action can also help provide additional evidence as to the presence and absence of various processes of policy change. We assert that evidence gathered at the individual level can help establish the relative influence of different collective processes, and in some cases specify interactive or sequencing effects, developing a more complex snapshot of the interaction between policy context, individual, and collective action.

Our focus on models of the individual in policy process theories should not be understood as a desire to return to stagnant ontological debates between rational choice theorists and constructivist scholars that dominated early policy studies scholarship. Rather, we argue that varying policy contexts are likely to give rise to different types of human decision making processes and actions. We argue that scrutinizing the choices of policy actors while paying attention to causal pathways yields new analytical insights into how power, ideas, and institutions are transformed into policy outcomes, bringing us closer to understanding the dynamic politics of policy change.

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[1] We chose to focus on these theories and frameworks because, in contrast to those that focus on a single phenomenon (such as diffusion or a common pool resource challenge) or a single causal variable (such as policy networks, or policy frames and narratives), each of these theories and frameworks acknowledges and tries to incorporate the complexity of human behavior, systems and institutions into the study of policy process. All four theories are recognized streams of scholarship in policy studies with well-established research programs in a variety of policy areas and political jurisdictions (Sabatier and Weible 2014).

[2] Google scholar lists nearly 16,000 citations and that number is still climbing.

[3] Based on our reading of the theoretical underpinnings of the MSF we contend that there could be a case that the model of the individual in the MSF fits into quadrant 1 – in which actors are mostly driven by their material incentives. However, based on the assertions of the lead authors in the field that the model of the individual is that

of bounded rationality – implying that the particular institutional context guides choice - we have placed MSF into quadrant 2.

[4] A careful observer will note that this pathway aligns with quadrant 2 in Parsons' matrix, although the model of the individual in the ACF falls more firmly into quadrant 3. We would suggest that aligning the model of the individual and the internal and external events pathways in the ACF would help provide analytic clarity to these causal processes.

[5] It is important to note that a significant proportion of policy feedback theory also concerns the role of elites (Pierson 1993; Mettler and Soss 2004; Mettler and SoRelle 2014). Although the model of the individual in PFT is often underspecified (Heikkila and Cairney 2017), we contend that the mechanism of policy learning as defined in PFT parallels the specification of belief change and policy-oriented learning in the ACF. We have thus omitted the mechanism of policy learning in PFT to reduce repetition in the illustrative figure.

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