A River Runs Through It: A Multiple Streams Meta-Review

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This study uses content analysis of recent Multiple Streams Approach (MSA) research to determine the scope of MSA applications, examining the consistency, and coherence with which concepts of MSA are applied. Our analysis examines peer-reviewed articles testing MSA concepts available in English published from 2000 through 2013 (N = 311). Among other findings, we observe that MSA is applied to study 65 different countries, at multiple levels of governance, across 22 different policy areas, and by researchers spanning the globe. Our findings suggest that while MSA is prolific, consistency across applications—in terms of operationalization of MSA core concepts—is needed to facilitate theoretical development of the approach.

KEY WORDS: multiple streams, meta-review, theories of the policy process

Introduction

Focusing on how and why policies receive attention and come to fruition (or not), the genesis of the Multiple Streams Approach (MSA)[1] is found in John Kingdon's *Agendas, Alternatives, and Public Policies*, first published in 1984. Later editions of Kingdon's work (e.g., Kingdon, 1995) further refined MSA as have recent summaries by Nikolaos Zahariadis (1999, 2007, 2014). Currently, MSA is one of the most prolific and widely recognized of the approaches found within Sabatier's edited collections (Sabatier, 1999, 2007; Sabatier & Weible, 2014). A quick search in Google Scholar identifies 12,051 citations of the Kingdon 1984 edition alone.[2] Yet, there has not been a systematic and rigorous review of the MSA literature. As a result, we do not know how well MSA has been applied (not just cited) and in what ways.

We take steps in rectifying the lack of understanding of MSA proliferation and usage by examining recent MSA applications. To accomplish this task, we conduct content analysis of peer-review articles operationalizing or testing MSA concepts (here referred to as MSA applications) published between the years 2000 and 2013 as cited in the Web of Science database (*n* = 311, see Supporting Information Appendix C). Additionally, our analysis culminates in an evaluation of MSA applications,

where we reassess the approach in terms of four indicators previously applied by Cairney and Heikkila (2014, p. 364) to evaluate policy process frameworks, including MSA:

1. Degree to which MSA has been analytically used and results published;

2. Degree to which MSA has a shared vocabulary and defined concepts;

3. Degree of testing in multiple contexts using multiple methods;

4. Adaptation of key concepts over time.

We first provide an overview of MSA as a platform to launch our assessment of programmatic activity and coherence. Next we detail our data, coding protocols, and reliability assessments for content analysis. Subsequent sections examine MSA descriptors followed by usage of MSA concepts and subcomponents. We then offer an evaluation of MSA demarcated by each of the four indicators provided by Cairney and Heikkila (2014) noted above. Finally, we close with a discussion of the implications of our findings.

The Multiple Streams Approach: A Brief Overview

Our initial summary of MSA has two purposes. First, it provides a general overview of the approach. Second, it illustrates MSA concepts that guided codebook development for the content analysis informing this meta-review.

MSA is applied to understand public policy at the system level, modeling context to understand specific policy decisions. The context modeled by MSA exhibits conditions of ambiguity, where information is plentiful and where many competing and complementary interpretations of information coalesce forming diverse, yet plausible understandings of public policy. Operating within these conditions, actors—termed policy entrepreneurs—endeavor to gain advantage in the pursuit of their goals. Operating under time constraints, they typically couple existing policy solutions with emerging policy problems. Sometimes their actions are successful and other times not. To be sure, serendipity plays an important role in failures or successes; however, MSA posits that public policy is not entirely random and offers a set of concepts and processes to make sense of the policy process. Figure 1 illustrates MSA.

Three Streams: Policy, Politics, and Problems

In Kingdon's foundational book, *Agendas, Alternatives, and Public Policies* (1984), MSA is employed to explain several case studies related to public health and transportation policy. Using mostly qualitative interviews buttressed by secondary data Kingdon analyzes policy cases using the theoretical tools of MSA, illustrating how policies come to be. At the core of the approach is Cohen, March, and Olsen's (1972) garbage can model of organizational choice. Kingdon generates MSA's theoretical components by demarcating meaningful categories in the study of public policy, including problems, politics, and policies. These three components are like streams,
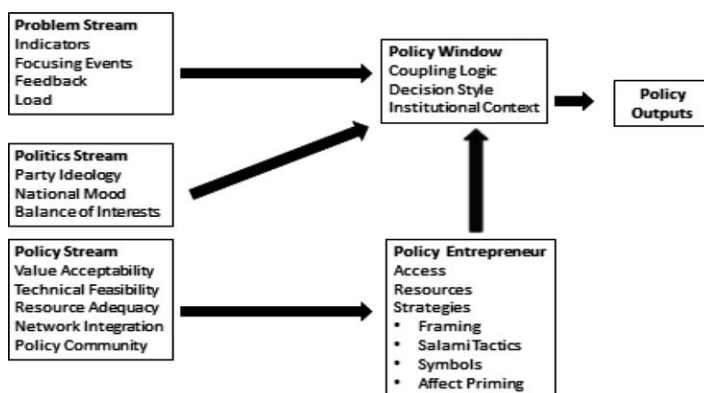
Figure 1. Diagram of the Multiple Streams Approach.

conditionally bound by their banks, carrying complex, and varying content, yet operating independently of one another. As Kingdon describes, "each of these streams has a life of its own, and runs along without a lot of regard to happenings in the other streams" (2003, p. 227).

The Problem Stream. For MSA, public policies occur when political entities want solutions to issues they perceive as problematic. MSA identifies several operational subcomponents within the problem stream including: indicators, focusing events, load, and feedback. *Indicators* are how actors identify and monitor potential problems, including metrics measuring the relative severity of a given problem (such as unemployment rates, and increasing costs), and a virtually endless array of rates, ratios, and anecdotes. Indicators commonly appear in policy problem arguments but *focusing events* are jarring and sudden. Focusing events become attached to particular problems, providing powerful impetus for action or change. A few notable focusing events that increased attention and recognizably preceded policy change include the 9/11 terrorist attacks, 3-Mile Island nuclear accident, and the Columbine shootings.

Other subcomponents within the problem stream are *load* and *feedback*. *Load* refers to the capacity of institutions to deal with problems. If policymakers are dealing with all-consuming or numerous problems, then a new problem's ability to nudge its way into the purview of policymakers is negligible. *Feedback*, similar conceptually to indicators, is information provided by analogous programs related to the problem of interest. For example, one might reasonably use the success of policies designed to mitigate the pollutants that cause acid rain to later provide a structure for regulating carbon to mitigate climate change (see Cook, 2010).

The Policy Stream. Described by Kingdon (1984) as the policy primeval soup, the policy stream contains a finite but complex collection of ideas and possibilities:

> While many ideas float around in this policy primeval soup, the ones that last, as in a natural selection system, meet some criteria. Some ideas survive and prosper... (p. 123)

MSA posits an idea's survival is related to five key subcomponents within the policy stream. Proposals likely to survive conform to existing value constraints (*value acceptability*), the technical ability to actually create and/or implement the proposal is at least a possibility (*technical feasibility*), and the needed resources for the proposal are obtainable (*resource adequacy*). Finally, there are the *policy communities* (Kingdon, 1984) or policy networks (Zahariadis, 1999) associated with the ideas that shape how dissemination along dimensions of size, mode, capacity, and access influence an idea's proliferation or, in some cases, its extinction (*network integration*).

The Political Stream. The political stream refers to the institutional and cultural context of the agenda or output of concern. This stream is operationalized using three subcomponents. *National mood* refers to the general orientation of the public toward issues, values, or solutions relevant to the policy problem. *Party ideology* refers to the aggregate orientation of the political parties within relevant institutions. Party ideology steers the behavior of parties within institutions by inhibiting or facilitating options. *Balance of interests* refers to the aggregate position of relevant interests, including arrayed advocacy groups and other actors interested in a particular problem.

Policy Windows

Reiterating a point made earlier, MSA's problem, policy, and politics streams are assumed to operate independently of one another. However, at times they are "coupled" during fleeting opportune times called policy windows. Windows open either in the problem or politics stream and provide the *institutional context* and the constraints and opportunities within which specific policies are created. Critical subcomponents of the policy window include: (i) *coupling logic*, the logic or arguments used to couple streams, and (ii) *decision style*, the ". . . amount of information needed before a decision can be made" (Zahariadis, 2007, p. 74).

Policy Entrepreneurs

A policy entrepreneur provides the necessary dose of agency required to couple the streams and shape policy outputs. Entrepreneurial success depends on three critical factors: *resources* (e.g., time and money), *access* to critical decision makers, and the *strategies* they employ. Strategies include efforts to manipulate and couple the streams ranging from bargaining to communication framing.

The above summary of MSA provides a theoretical foundation from which a codebook was developed to assess both how frequently and how well MSA is being applied. Our next section addresses codebook development, reliability, and the data used to explore MSA proliferation and the quality of applications.

Data

To produce a list of appropriate MSA studies suitable for content analysis allowing assessment of how and when MSA is applied, we queried the Web of Science database to generate a list of peer-reviewed journal articles citing MSA.[3] Two source

citation criteria guided the initial search conducted on December 30, 2013: (1) citations of all editions of Kingdon's *Agendas, Alternatives, and Public Policies* (1984);[4] and (2) citations of MSA chapters written by Zahariadis for either the 1999 or 2007 editions of the *Theories of the Policy Process*. To maintain a reasonably long time frame and a manageable number of studies for analysis, we refined the criteria to include only peer-reviewed journal articles published from 2000 through 2013, producing 14 years of publications, resulting in a total of 1,933 articles for content analysis.

Content analysis was conducted in two rounds by six coders. During the first round of coding, MSA articles simply citing the Kingdon and Zahariadis works but not actually using MSA were identified and removed. Articles categorized as using MSA operationalized one or more MSA concepts, explicitly situate said concepts within the MSA, as well as citing either the Kingdon or Zahariadis works (See Supporting Information Appendix A). Round 1 coding captured 484 articles using MSA that were carried over to the second round of content analysis.

For the second round, a more detailed codebook was developed with the intent to understand how MSA has been tested or *applied* (see Supporting Information Appendix B). As a consequence of the applied focus, 41 theory-building articles from round 1 that did not operationalize and test concepts or variables within MSA were removed from the analysis (see Supporting Information Appendix A, Sections 2 and 3). Round 2 coding refinements also identified five non-journal publications and 127 non-MSA applications not identified in Round 1. All were removed from the analysis. Thus, of 1,933 peer-reviewed publications citing at least one of the foundational works since 2000, 311 were identified as applications of MSA. Round 2 codes included 65 qualitative and quantitative content analysis categories.

Intercoder Reliability Testing Procedure

Codebooks were generated for the purpose of identifying MSA applications and coding MSA concepts. To ensure coding reliability, coders were trained to use manifest coding techniques bound tightly by the wording of the codebook and intercoder reliability (ICR) tests were performed multiple times throughout the coding process. ICR tests are a process where two or more independent coders code some percentage of the same material. Coder agreement determines the reliability of a study's content analysis measures. This study uses percent agreement as the reliability statistic to assess coder agreement. ICR test samples were drawn randomly with sample sizes calculated using conservative estimates for acceptable error and our expected percent agreement (Lacy & Riffe, 1996; Riffe, Lacy, & Fico, 2005).[5] No coder coded the same article twice. Round 1 percent agreement was 89.5. Round 2 percent agreement was calculated for each quantitative code within our codebook and is reported in Table 1.

Acceptable ICR standards common to content analysis justify reporting all measures that exceed or equal 80 percent agreement (Lacy & Riffe, 1996; Lombard, Snyder-Duch, & Campanella Bracken, 2002; Riffe et al., 2005), which we do. However, several of our measures (federal and national levels of governance codes as well as policy entrepreneur codes) fall below the 80 percent threshold. Similar to

Table 1. Second Round Content-Analytical Percent Agreement

Category		Category	
Code	Agreement (%)	Code	Agreement (%)
Identifying codes		**MSA Concepts**	
Peer-reviewed article?	98	**Politics stream employed**	88
More than 1 reference?	91	National mood employed	90
Scope		Ideology employed	89
Application/Theory building	88	Balance of interests employed	82
Countries examined	82	**Policy stream employed**	89
Level of governance: local	78	Policy community employed	90
Level of governance: state	86	Value acceptability employed	90
Level of governance: regional	93	Technical feasibility employed	95
Level of governance: federal/national	73	Resource adequacy employed	96
Level of governance: transnational	86	Network integration employed	97
Method		**Problem stream employed**	86
Type of analysis	82	Indicators employed	84
		Focusing event employed	86
		Feedback employed	88
		Load employed	99
		Policy entrepreneur employed	79
		Access employed	95
		Resources employed	86
		Strategies employed	82
		Policy window employed	80
		Coupling logic employed	85
		Decision style employed	99
		Institutional context employed	90

past meta-review studies of this nature (e.g., Pierce et al., 2014, p. 7) we report codes that exceed 70 percent to demonstrate possible trends, but in doing so we emphasize that our results are less robust regarding these particular concepts.

Analysis

The following sections present our interpretations of content analysis data collected from 311 peer-reviewed MSA applications. To quickly summarize, content analysis was conducted on these applications using a codebook that accounted for 65 MSA content categories guided by Figure 1, and the accompanying MSA summary presented earlier in this article. The 65 MSA categories included 33 quantitative categories (with the ICR tests summarized in Table 1) and 32 qualitative categories. For our purposes, quantitative categories refer to numeric codes where ICR tests were performed and the codes later aggregated for analysis; qualitative codes refer specifically to non-numeric codes that were not subjected to ICR. Reported codes and analysis are guided by the following two categories: *descriptors of applications* and *concept applications*.[6]

Descriptors of Applications

We first provide a panoramic view of the volume and nature of MSA applications by way of MSA descriptors. Descriptors include publication outlet and author

information, policy domains, geographic area studied, governance level, and methods employed.

Publication Outlet and Author Information. The variety of publication outlets and author institutional affiliations, as well as the increase in number of publications since 2000 identified in this analysis, indicate that MSA is both prolific and widely disseminated. MSA applications regularly appear in journals that self-identify as interdisciplinary (e.g., *Social Science Quarterly* & *Governance*), generalist public administration and public policy outlets (e.g., *Public Administration*, *Journal of European Public Policy*, *Policy Studies Journal*, *Policy Sciences*), and mainstream political science journals (e.g., *Political Research Quarterly*, *Journal of Politics*). Multiple international publications with various region-specific outlets (e.g., *Australian Journal of Political Science*, *Scandinavian Political Studies*) also consistently publish MSA applications. Overall, our coding scheme yielded applications published in 165 different peer-reviewed journals. Of those journals, 54 published MSA applications at least twice since 2000. Journals publishing ten or more MSA applications during this same time span include the *Policy Studies Journal* (13), *Social Science and Medicine* (12), *Journal of European Public Policy* (10), and *Health Policy and Planning* (10). While there are several journals that seem to have a proclivity for MSA applications, the majority of publication outlets (68 percent) captured by our coding scheme published only a single MSA application since 2000.

Although a sizeable number of MSA applications have been published by authors affiliated with U.S. institutions ($n = 135$), many other countries are represented as well. The majority of non-U.S. authors are associated with European institutions ($n = 151$): United Kingdom (60), The Netherlands (18), Sweden (15), Denmark (10), Norway (8), Germany (7), Switzerland (5), Italy (5), Belgium (5), Finland (6), Spain (4), Ireland (4), France (3), and Poland (1). In addition to the United States and Europe, publications from authors in Oceania (21), Asia (20), and Africa (9) were also observed, indicating that MSA has been useful to authors writing in an astonishing variety of national and institutional contexts (Figure 2).[7]

Analysis of publication dates of refereed applications indicates that MSA has grown in popularity since 2000—and is trending upward. Eleven MSA applications were published in 2000 and 41 in 2013. The lowest number of publications per year occurred in 2001 when only six were published. The highest number of publications occurred in 2011 with 45 publications (Figure 3).

Policy Domains. Due to issues with achieving adequate ICR, policy domains were coded qualitatively during content analysis. Qualitative coding entries focused on self-identified policy areas invoked by the authors of MSA applications. These codes were distilled by the research team into 22 general policy domain categories: Agriculture, Arts, Defense, Diversity, Economic, Education, Emergency Services, Energy, Environment, Firearm, Foreign Relations, Justice, Governance, Health, Labor, Non-profit, Planning/development, Real Estate, Religion, Technology, Transportation, and Welfare. Six articles were categorized as "Not Applicable" because authors did not specify a substantive policy area (e.g., Gains & Stoker, 2011).

The most popular policy domains explored were: health, 28 percent (e.g., Abiola, Colgrove, & Mello, 2013): environment, 19 percent (e.g., Crowley, 2013); governance,
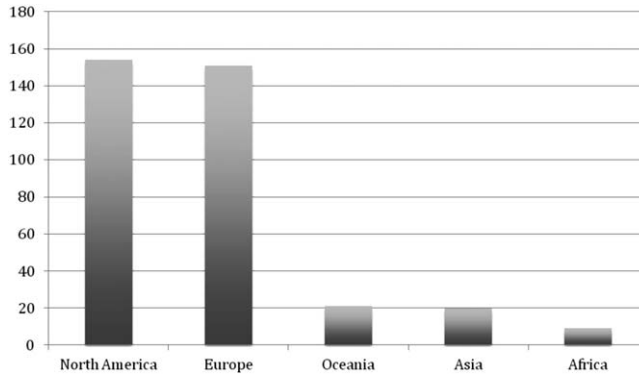
Figure 2. Author Institutional Affiliation by Region.

North America (154): United States (135) & Canada (19); **Europe** (151): UK (60), Netherlands (18), Sweden (15), Germany (7), Switzerland (5), Denmark (10), Italy (5), Belgium (5), Norway (8), Spain (4), Finland (6), Ireland (4), France (3), Poland (1); **Oceania (21)**: Australia (20), New Zealand (1); **Asia (20)**: Taiwan (1), Thailand (3), China (3), Iran (1), Israel (3), Turkey (2), Bangladesh (1), Indonesia (1), Kazakhstan (1), Singapore (2), South Korea (1), United Arab Emirates (1); **Africa (9)**: South Africa (5), Ghana (3), Zambia (1).

14 percent (e.g., Burstein, Bauldry, & Froese, 2005); education, 8 percent (e.g., McDonnell & Weatherford, 2013); and welfare, 7 percent (e.g., Strauss, 2011). These five domains account for 77 percent of all MSA applications. While there is wide diversity in terms of policy domains, the data indicate MSA often has a general domestic policy domain inclination (Figure 4).

Geographic Area Studied. To assess the comparative capacity of MSA we turned our attention to the geography of MSA applications (which could mean more than one code for each application, as some studies examined more than one geographic area). Using similar qualitative coding as the previous policy domain category, within the 311 MSA applications we identified 482 discrete country
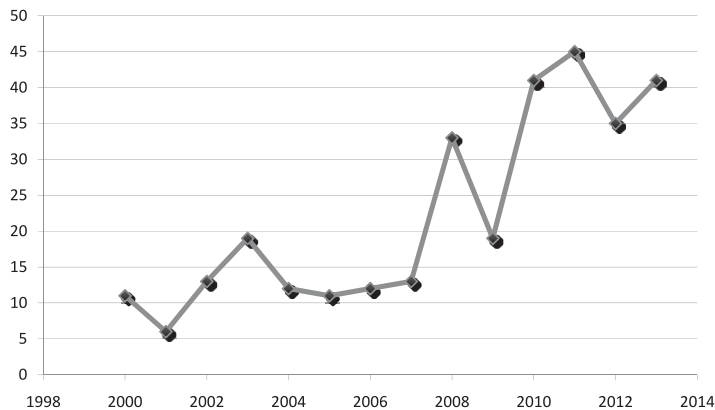

Figure 3. MSA Refereed Publications by Year, 2000–13.

Years published. 2000 (11); 2001 (6); 2002 (13); 2003 (19); 2004 (12); 2005 (11); 2006 (12); 2007 (13); 2008 (33); 2009 (19); 2010 (41); 2011 (45); 2012 (35); 2013 (41).
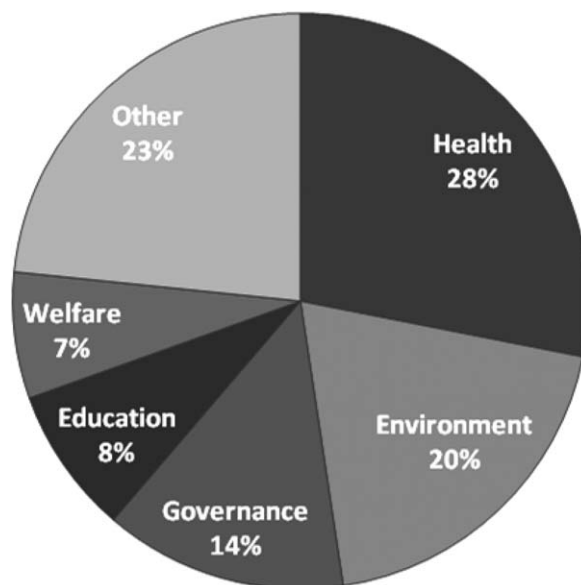
Figure 4. Policy Domain Foci.

Some articles fell into more than one policy domain but none fell into more than three.
Health (95), **Environment** (66), **Governance** (46), **Education** (28), **Welfare** (24), and **Other**: Agriculture (3), Arts (1), Defense (8), Diversity (5), Economic (11), Emergency Services (3), Energy (5), Firearm (2), Foreign Relations (4), Justice (5), Labor (3), Nonprofit (3), Planning/development (8), Real Estate (1), Religion (2), Technology (7), Transportation (8).

codes dispersed across 65 different countries. Seventy-eight percent of the 482 country codes included Western democracies in either Europe ($n = 205$) (e.g., Huntjens, Pahl-Wostl, & Grin, 2010) or North America ($n = 167$) (e.g., Anderson, Box-Steffensmeier, & Sinclair-Chapman, 2003; Ness, 2010) (see Figure 5). Despite this sizeable majority, a significant amount of MSA studies have examined areas outside of North America and Europe ($n = 105$), including Oceania (e.g., Aberbach & Christensen, 2001), Asia (Steiner-Khamsi, 2006), Africa (Bird et al., 2010), and South America (e.g., Okma et al., 2010). Disaggregated by country, reviewed MSA applications studied a diverse range of countries such as Mexico (e.g., Marier & Mayer, 2007), New Zealand (e.g., Aberbach & Christensen, 2001), Romania (Iusmen, 2013), Kyrgyz Republic (Steiner-Khamsi, 2006), Burkina Faso (e.g., Ridde, 2009), and Guatemala (e.g., Pelletier et al., 2012).

Governance Level. Five levels of government were coded: local, state, regional, federal or national, and international or transnational. MSA applications were coded for each level analyzed within each study, which in many instances meant that more than one level of government was identified. 418 governance codes were collected from the 311 MSA applications. Figure 6 reports levels of government analyzed.

Local governance accounts for 15 percent of all governance codes collected (e.g., Liu, Lindquist, Vedlitz, & Vincent, 2010), state governance accounts for 12 percent (e.g., Robinson & Eller, 2010), regional governance accounts for 8 percent (e.g., Block & Paredis, 2013), transnational government accounts for 13 percent (e.g., Prakash &
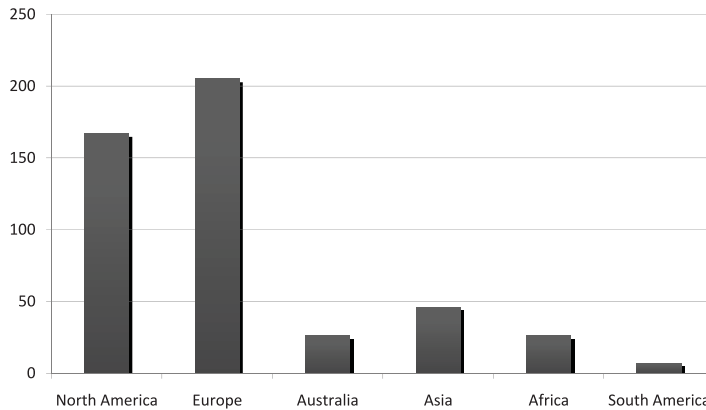
Figure 5. Geographic Areas Studied.

Location of study by region[13]. Some articles studied multiple areas. **North America:** United States (132), Canada (32), Mexico (3); **Europe:** EU (8), UK (53), Netherlands (22), Sweden (17), Germany (13), Switzerland (5), Denmark (14), Italy (11), Belgium (11), Norway (4), Spain (7), Finland (7), Ireland (1), France (10), Poland (5), Portugal (3), Austria (2), Hungary (3), Russia (1), Ukraine (1), Romania (1), Lithuania (1), Slovenia (1), Bulgaria (1), Albania (1), Slovakia (1), Greece (1); **Oceania:** Australia (23), New Zealand (3); **Asia:** Taiwan (2), Thailand (4), China (11), India (5), Iran (1), Iraq (1), Israel (4), Turkey (4), Bangladesh (2), Indonesia (4), Singapore (1), South Korea (2), Mongolia (2), Cambodia (1), Vietnam (1), Kyrgyz Republic (1); **Africa:** Africa (1), South Africa (6), Ghana (3), Zambia (1), Mozambique (2), Burkina Faso (2), Tanzania (4), Uganda (2), Malawi (2), Ethiopia (1), Guinea (1), Madagascar (1); **South America:** Bolivia (1), Guatemala (1), Peru (1), Honduras (1), Costa Rica (1), Brazil (1), Chile (1).

Kollman, 2003), and federal/national accounts for 52 percent (e.g., Aberbach & Christensen, 2001, 2013). The high percentage of federal/national codes indicates a preference among MSA scholars to examine the national level, but it is worth pointing out the usefulness of MSA at lower levels of governance (see, e.g., Liu et al., 2010).

The majority of MSA applications studied a single level of governance (72 percent) (e.g., Strand & Fosse, 2011). However, many applications utilized multiple levels of analysis: 20 percent studied two levels (e.g., Iusmen, 2013; Liu et al., 2010), 6 percent studied three levels (Fisher, 2012), and 1 percent studied four and five levels (e.g., Huitema, Lebel, & Meijerink, 2011; Lush, Walt, & Ogden, 2003). This variation indicates that while MSA may be most popular at a single level of analysis, it is also simultaneously applicable to multiple levels of government.

Methods Employed. Our research team coded each MSA application as falling into one of three methodological categories: quantitative, qualitative, and mixed methods. Of the 311 coded documents, 273 MSA applications (88 percent) were coded as qualitative (e.g., Buhr, 2012; Tjernshaugen, 2011). Qualitative, for our coding purposes, is defined as studies that do not employ the use of numbers beyond simple descriptive statistics. Within the subset of qualitative studies (each having the possibility of multiple qualitative methodologies), the majority of studies employed case studies (43 percent) and/or interviews (42 percent); other notable qualitative methodologies employed include surveys (6 percent), content analysis (4 percent), participant observation (3 percent), and focus groups (2 percent). Buhr (2012) is a good example of
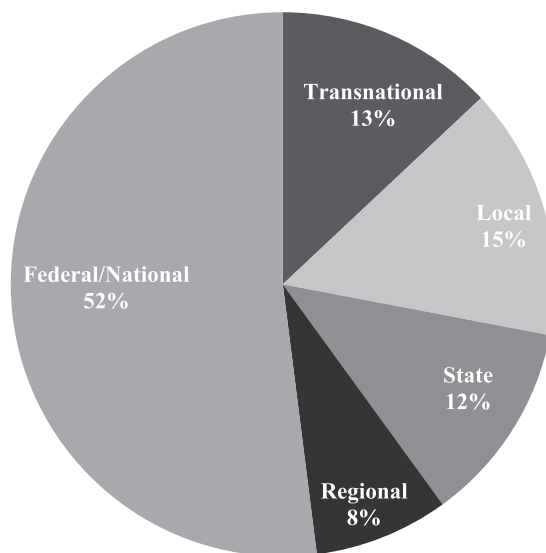
Figure 6. Level of Governance Studied.

the kind of scholarship found in the qualitative studies identified in our sample of MSA applications. Buhr (2012) employs a case study methodology about aviation and climate change to show that "time-aware institutional entrepreneurs" (p. 1565) open windows of opportunity by strategically syncing activities with institutional processes.

A smaller proportion of MSA applications use quantitative and mixed methods data analysis. Of the 311 applications, 13 were quantitative applications. While quantitative applications were few, we identified considerable variety in methods, including ordinary least squares regression analysis (Travis & Zahariadis, 2002), logistic regression analysis (Robinson & Eller, 2010), and simulation modeling (Rapaport, Levi-Faur, & Miodownik, 2009). Our coding also revealed 20 mixed-methods applications, which contained some combination of qualitative and quantitative methodologies (e.g., Huitema & Meijerink, 2010; Mole, 2002). In total, nearly 11 percent of the MSA applications engaged in quantitative data analysis. The strong preference for qualitative methodology among MSA scholars suggests the approach may be difficult to operationalize in terms of measurable variables.[8]

Concept Applications

Having descriptively analyzed MSA applications, our next section examines MSA concept applications. In so doing, we analyze applications of existing MSA concepts and subcomponents therein, self-proclaimed new MSA concepts and subcomponents, and the integration and comparison of MSA with other theories, frameworks, and approaches.

Existing Concepts. MSA applications are examined in terms of the five major categorical concepts of the approach: politics stream, policy stream, problem stream, policy

entrepreneur, and policy window. Subcomponents of these five concepts specified in our earlier overview of MSA (and depicted in Figure 1) are also examined.

It is perhaps not surprising that with so many distinct MSA components and subcomponents (24 identified as discrete variables in this analysis) that no MSA application reviewed here employed all of the MSA subcomponents. In fact, only about a third (106 of the 311 or 34 percent of MSA applications) included all five of the major concepts of the approach (e.g., Abiola et al., 2013; Liu et al., 2010). More than half included all three streams but not the policy entrepreneur or policy window (e.g., Minkler, Garcia, Williams, LoPresti, & Lilly, 2010). The policy window was the most popular of all the MSA concepts, included in 72 percent of all applications (e.g., Buhr, 2012; Thompson, 2008) (Figure 7).

The Politics Stream.   The politics stream is identified in 197 (63 percent) of MSA applications (e.g., Leiber, Greß, & Manouguian, 2010; Stout & Stevens, 2000). Within the politics stream, *national mood* is identified in 20 percent of applications (e.g., Liu et al., 2010). Similarly, *ideology* is identified in 18 percent (e.g., Kim, Joo, Kim, & Park, 2009) and *balance of interests* (e.g., Cook & Rinfret, 2013) in 20 percent. The fairly low usage of the politics stream subcomponents suggests that researchers do not perceive the nuance of the subcomponents as essential to describing and/or explaining the politics stream more generally.

The Policy Stream.   The policy stream is operationalized in 63 percent of MSA applications. Like the subcomponents in the previous discussion, the subcomponents of the policy stream are utilized infrequently: of MSA applications operationalizing the policy stream, *policy community* is identified in 24 percent (e.g., Lush et al., 2003), *value acceptability* in 14 percent (e.g., Blankenau, 2001), *technical feasibility* in 14 percent (e.g., Liu et al., 2010), *resource adequacy* in 4 percent (e.g., Liu et al., 2010), and *network integration* in 5 percent (e.g., Petchey, Williams, & Carter, 2008). Policy community stands out as the most popular of the policy stream subcomponents, appearing in 24 percent of the applications and is the second most popular of all MSA subcomponents. Resource adequacy and network integration are rarely employed. The data suggest that similarly to the politics stream, identification of the subcomponents of the policy stream is perceived as largely unnecessary in terms of specifying and describing the policy stream.

The Problem Stream.   Identified in 62 percent of MSA applications (e.g., Baum, Laris, Fisher, Newman, & MacDougall, 2013), the problem stream is employed at a similar rate to the other streams. *Indicators* within the problem stream are identified in 69 percent of the MSA applications (e.g., Roth, 2011), *focusing events* in 27 percent (e.g., Pelletier et al., 2012), *feedback* in 16 percent (e.g., Blankenau, 2001), and *load* is identified in 1 percent (e.g., Baum et al., 2013). Indicators are the most frequently identified subcomponent of the problem stream and are also the most commonly identified subcomponent of MSA more generally. However, outside of indicators, the remaining problem stream subcomponents are used infrequently. Thus, like the other two streams, most researchers do not see it as necessary to specify the full complement of problem stream subcomponents in their studies.
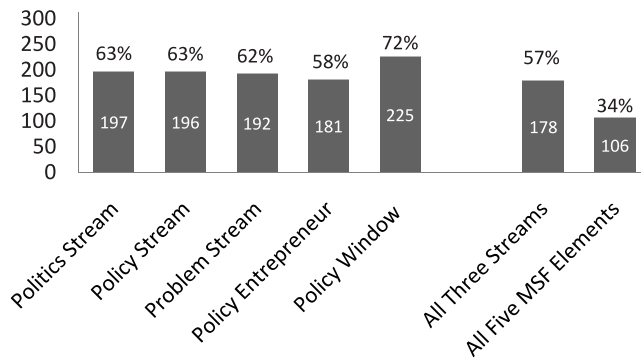
Figure 7. Operationalizing Aggregate Concept Applications.

$n = 311$.

Policy Entrepreneurs. The policy entrepreneur is identified in just over half (58 percent) of all MSA applications (e.g., Aberbach & Christensen, 2013), the least of any of the five core MSA concepts. And much like other major MSA concepts, policy entrepreneur subcomponents are similarly identified sparingly. For those applications employing the policy entrepreneur, *access* is identified in 7 percent (e.g., Marier & Mayer, 2007), *resources* in 12 percent (e.g., Mintrom, 2013; Oborn, Barrett, & Exworthy, 2011), and *strategies* in 15 percent (e.g., Huitema et al., 2011; Zahariadis, 2008). An exemplar study of the policy entrepreneur can be found in Huitema et al. (2011) who analyze policy entrepreneur strategies regarding water policy. While policy entrepreneurs are often identified within MSA studies coded for our review, the data indicate that specification of MSA subcomponents associated with this category is usually not needed to describe and/or explain policy entrepreneur behavior.[9]

Policy Windows. The policy window is the most popular of all the MSA concepts, being identified in 72 percent of all MSA applications in this meta-review (e.g., Thompson, 2008). However, like the policy entrepreneur and the three streams, the policy window's subcomponents are sparingly used. *Coupling logic* is identified in 12 percent of MSA applications (e.g., Bakir, 2003), *institutional context* in 10 percent (e.g., Buhr, 2012; Marier & Mayer, 2007), and *decision style* is identified once (Tjernshaugen, 2011).

New Subcomponents. About 10 percent (30) of the analyzed applications included subcomponents identified as new or innovative to the MSA by the application's author(s). New subcomponents in the politics stream include macropolitical developments (Kalifeh, Cohen-Vogelm, & Grass, 2011), dramatic events (Bakir, 2003), and policy-related local conditions (Guldbrandsson & Fossum, 2009). New subcomponents of the policy stream include affordability (Blankenau, 2001), while new subcomponent identification in the problem stream includes concepts such as a state-specific problem stream (McLendon, 2003). Newly identified policy entrepreneur subcomponents include: the bureaucratic (Gains & Stoker, 2011) and political

(Beem, 2007) entrepreneur,[10] argumentation (Aberbach & Christensen, 2013), social mechanisms (Barzelay & Gallego, 2010), consensus-building activities (Abiola et al., 2013), and issue opportunists (McLendon, 2003). New subcomponents in the policy window include hot bills (Anderson et al., 2003), narratives (Dudley, 2013), window predictability (Ren & Guo, 2011), as well as political (Bakir, 2003) and issue windows (McLendon, 2003). These new subcomponents have largely occurred more recently in the literature; 17 occurred since 2009, of which most appeared in 2011 (five articles) and 2013 (six articles). Although just a few of the applications reviewed here identified new subcomponents, the breadth of new concepts being developed indicates that in addition to being prolific, MSA is also malleable enough to expand theoretically to accommodate new research territory.

Integration and Comparison with Other Theories and Frameworks. Because individual MSA applications characterized comparisons and integration with other theories, frameworks, and approaches in different ways, the codes for the analysis in this section were necessarily qualitative. Our qualitative coding scheme revealed 83 MSA applications comparing and/or integrating MSA with other theories, approaches, and/or frameworks (e.g., Klugmann, 2011).

Many policy process frameworks are represented in these comparisons and integration efforts including: ACF (e.g., Compston & Madsen, 2001), diffusion of innovation (e.g., Steiner-Khamsi, 2006), punctuated equilibrium theory (e.g., Huitema & Meijerink, 2010), policy networks (e.g., Block & Paredis, 2013; Steiner-Khamsi, 2006) policy entrepreneurship framework (e.g., Hammond, 2013), and policy regimes (e.g., Kalifeh et al., 2011). Other policy approaches also utilized include ecology models (e.g., Shouse & Sun, 2013), incrementalism (e.g., McLendon, 2003), causal stories (Kamieniecki, 2000), narrative analysis (e.g., Michaels, Goucher, & McCarthy, 2006), and top-down and bottom-up implementation (e.g., Mole, 2002). In addition to theories of the policy process, institutional and organization theories are also present (e.g., Buhr, 2012), as well as a variety of other approaches including: gender studies (Annesley & Gains, 2013), cost-benefit approaches (Graves, Clare, Haines, & Bird, 2010), and electoral approaches (Ness, 2010). However, of the 83 applications coded for this category, the frameworks used most commonly in conjunction with or in comparison to MSA are punctuated equilibrium theory (20 percent) and the ACF (17 percent).

Assessing MSA

Our analysis has so far concentrated on MSA descriptors, concept applications, and comparison/integration efforts with other theories and approaches to the study of public policy. The next section moves beyond description into an analytic assessment of MSA. We utilize four elements of an exogenous standard which was recently applied by Cairney and Heikkila (2014) to assess seven major approaches to the study of the policy process including MSA. Table 2 restates evaluative observations made by Cairney and Heikkila (2014) and summarizes our assessment of MSA's productivity and scholarly usefulness along these same dimensions.

Table 2. Criteria Assessing MSA

Assessment Dimension	Cairney and Heikkila (2014)	Updated Assessment
Analytically used and its results published.	Kingdon's two editions plus numerous applications.	Citations of core works are sizeable; actual applications of MSA, less so, but still numerous (311 from 2000 to 2013).
Shared vocabulary and defined concepts.	Primarily the five structural elements of the framework.	While there are exceptions, overall MSA concepts are usually applied metaphorically and without clear specification or operationalization.
Tested in multiple contexts using multiple methods.	Applications: diverse policy domains, including subnational, national and international Method: Mostly case studies.	Contexts are diverse, but majority of applications are applied in the United States or Europe at the national level; the vast majority of MSA applications are qualitative case studies.
Adaptation of key concepts over time.	Scholars have modified theory to apply to foreign policy and European cases but not as part of a core program.	Evidence exists that new concepts are being proposed; usage and incorporation of new concepts are unclear.

Analytically Used and Its Results Published

One way to assess MSA is through the sheer proliferation of the approach in terms of publications. Our analysis indicates that MSA is prolific. Our initial searches for peer-reviewed citations revealed 1,933 citations occurring between 2000 and 2013. Further coding refinements narrowed peer-reviewed publications to only those that actually apply MSA. These refinements identified 311 applications. While 311 is significantly less than the initial list of citations (roughly 16 percent of the citations were applications), it is nevertheless impressive. By illustrative comparison,[11] a recent meta-review of the policy design and social construction framework covering a 20-year timeframe (1993–2013) examined 111 studies (Pierce et al., 2014). Similarly, Weible, Sabatier, and McQueen (2009) performed a meta-review of 80 ACF applications spanning the years between 1987 and 2006. Importantly then, not only is the raw number of MSA applications comparatively impressive but the number has also been trending upward over the past 14 years. We conclude MSA is widely used and its results published.

Shared Vocabulary and Concepts

Essential to any approach to the study of public policy is a core group of concepts and vocabulary that allow researchers within the research tradition to communicate ideas, relationships, and processes. If such a shared understanding does not exist, it becomes difficult to argue that there is any research program at all. Like Cairney and Heikkila's (2014) assessment of MSA, we too find that the five major MSA concepts (i.e., three streams, policy entrepreneur, and policy window) are widely shared. That is, when MSA is applied, one or more of these concepts are identified

(this is true by definition for our 311 applications). However, it is apparent that usage of these core concepts moves neither beyond obligatory identification, nor does it appear necessary for all or even a majority of the five major MSA concepts to be applied in any given application. In fact, our analysis reveals that only 34 percent, roughly 1/3 of the applications in our sample, employ all five of the MSA major concepts. This last observation is peculiar when one considers the interactions necessary to marshal the full force of MSA's explanatory power.

If the three streams run independently until coupled by a policy entrepreneur taking advantage of policy windows, what does it mean for an MSA application to invoke only one or two major concepts of the approach? In some cases, it means that the application is exploring in depth one or more of MSA core concepts (e.g., Ren & Guo, 2011). In other cases, underspecifying MSA implies that the study is not offering an MSA explanation or description of the policy process in the same manner prescribed by Kingdon (1984) and Zahariadis (e.g., 2014). Rather, these studies are invoking MSA concepts and subcomponents as supplementary or auxiliary concepts to fit specific analyses.

Importantly and setting aside the issue of whether or not one, two, or five of the major MSA concepts should be employed for a study to be considered an MSA application, when the major concepts are employed, the majority of MSA applications in our analysis simply identify the concept (i.e., stream, policy window, and policy entrepreneur) and not the major concept's full complement of subcomponents. In the vast majority of applications subcomponents are operationalized at remarkably low rates. This is a strong indication that the shared language of MSA is primarily bound by the five major concepts but usually only superficially so.

Tested in Multiple Contexts Using Multiple Methods

Another way to assess a theoretical approach is in terms of where it is applied and what types of methods are used. The approach would arguably be vibrant and useful if multiple methods are applied over a range of diverse contexts. Our results indicate that MSA is tested in multiple contexts. Although roughly 75 percent of MSA applications are being conducted to assess policy processes in the United States and Europe, we see a nontrivial number of publications examining geographic areas elsewhere around the world in Oceania, Asia, and Africa. Although we also observe 52 percent of MSA applications studying the national level of government, the other half of the MSA studies in our population examined local, state, regional, or transnational levels of governance either independent of or in conjunction with national levels of governance. Additionally, while five policy domains (health, environment, governance, education, and welfare) constitute 77 percent of MSA applications, we coded 22 separate policy domains where MSA is being applied. MSA is clearly productively used in multiple contexts.

Regarding diversity of methods, our analysis largely confirms the observation made by Cairney and Heikkila (2014) that MSA uses predominantly qualitative case studies. Eighty-eight percent of our 311 studies are identified as qualitative studies.

However, we also found several studies reliant on sophisticated quantitative analysis methods ranging from OLS to simulation. While MSA has been predominantly a qualitative approach, researchers are finding ways to quantify. Qualitative and quantitative data collection and analysis are both valuable, and if the MSA is going to develop, both methodologies are necessary to generate, test, and retest hypotheses.

Adaptation of Key Concepts Over Time

An important criterion of scholarly usefulness is the need to adapt key concepts over time to capture growing explanatory nuance as it evolves over multiple applications. For adaptation of key concepts to occur, one must begin from shared understandings of the concepts. Made evident by the intermittent usage of subcomponents and the five major components discussed earlier, it is not clear that researchers begin from the same understanding of the five major concepts. This creates problems in our assessment of MSA's performance along this dimension because we cannot be sure that an adaptation of a proposed concept is taking place or if we are simply dealing with a different operationalization of an existing MSA concept or subcomponent. Our content analysis identified 30 applications that proposed new MSA subcomponents. As a blunt metric for assessing adaptation, this number suggests that researchers are making efforts to adapt MSA to deal with emerging or new policy terrains. However, in the absence of conceptual benchmarks that revisit and reformulate MSA hypotheses we cannot be sure if these adaptations are widely accepted or if they are simply anomalies. We conclude there is a need for a study to specify MSA's theoretical benchmarks and hypotheses to more clearly identify the potential and limits of conceptual stretching.

Conclusion

The aim of this meta-review has been to assess the quantity, quality, and nature of MSA applications in peer-reviewed journals between 2000 and 2013. The first part of our assessment identified MSA descriptors and concept applications. We specified how often MSA applications were published, by whom, how detailed, and whether and how often specific major MSA concepts and their constitutive subcomponents were being applied. We also examined what new theoretical developments are being proposed and attempted to gauge how often MSA is compared to or integrated with other theories and approaches to the study of public policy. To further aid our assessment of MSA's productivity and scholarly usefulness, we employed four evaluative dimensions. We first summarize our findings and then draw implications for theory development.

Our analysis indicates MSA is prolific with 1,933 total citations for our coded time period; of those, 311 were actual MSA applications. We also found a positive, upward trend in applications, which has accelerated in recent years. We conclude MSA enjoys not only high scholarly visibility but also a growing number of applications.

While MSA analysts use the same vocabulary they do not all share the same definition of concepts. By definition, our 311 MSA applications are united in their usage of one or more of MSA's five core concepts: political stream, problem stream, policy stream, policy entrepreneur, and policy window. However, we also found that MSA core concept subcomponents are specified at remarkably low rates. Coupled, these two findings lead us to conclude that while MSA has a shared vocabulary, concepts are defined quite loosely, intermittently, and not all of the major concepts or their subcomponents are deemed necessary by researchers who apply MSA. This last point is problematic given that Kingdon's original articulation of MSA defines the concepts as interrelated, and all seem necessary to explain the policy process, particularly agenda setting. MSA must now begin to ask itself pointed questions about the theoretical implications of such piecemeal development. Is it evidence of second-generation research that provides more nuanced diagnosis of theoretical gaps and respecification of hypotheses, as Zahariadis (2014) contends, or is it the sign of theoretical inadequacy and stagnation?

The meta-review reveals extensive MSA context portability. We observed MSA applied to study 65 different countries, at five levels of governance, across 22 different policy areas, and conducted by researchers spanning the globe. However, we also observed "preferred" contexts. Most applications examine the United States or Europe, are conducted by U.S. or European researchers, focus on federal/national levels of governance, and have a domestic policy focus. In terms of method, nearly nine out of ten times, MSA applications are qualitative. Anomalous as they may be, however, rigorous and sophisticated quantitative MSA studies do exist. In short, MSA is portable to multiple contexts and amenable to varied methods. We conclude MSA researchers should extend applications to more areas outside of the United States and Europe, using a combination of sophisticated qualitative and—perhaps more importantly—quantitative methods.

Finally, we found a robust but uneven trajectory of theory development. We identified 30 adaptations of MSA concepts, most of which have taken place since 2009. This observation is indicative of healthy theory development. However, our data do not speak to whether or not these adaptations are accepted and widely applied. Furthermore, if one considers the aforementioned intermittent usage of MSA concepts and subcomponents concurrently with the small number of MSA adaptations, it becomes clear that MSA's core vocabulary does not meaningfully extend beyond the five major concepts. Thus any proposed "adaptation" could simply be yet another operationalization of existing concepts without adding explanatory or predictive capacity.

We draw two implications for MSA theory development. First, MSA has proven to be a very productive and analytically useful way to study public policy. But it lacks periodic assessments to identify gaps and best practices, which make the research program appear rudderless. While our review has identified some gaps, it has not specified best practices. It is important for scholars to know how well different indicators measure concepts, the limits and importance of interactions in developing efficient MSA explanations, and the logical consistency necessary to improve and delimit explanatory and predictive capabilities. More explicit tests are needed to

rigorously assess not just whether but how well MSA competes or complements other policy approaches (Zahariadis, 2013).

Second, MSA possesses unparalleled empirical richness as evidenced by the range of contexts, levels, and methods. However, its greatest asset may also be a liability because such variety also undermines conceptual development. It is a problem well known to comparativists. Sartori (1970) observed many years ago that concepts lose their clarity, precision, and often consistency as they are applied to different contexts than they were originally intended. The more they travel contextually, the higher they climb the "ladder of abstraction," and the more analytically problematic they become. To fortify MSA's strength in successfully analyzing an ever-wider range of cases but still retain analytical rigor, scholarship should also pay attention to problems of scope and attributes. There is a need for studies that clearly demarcate conceptual extension—the range of cases and conditions to which MSA concepts may apply—and still maintain conceptual intension—the set of attributes that define membership in a single concept.[12] MSA clearly does not explain all policy decisions equally well in all cases. Neither does the political stream, for example, include the same dimensions in all contexts. What limits exist and under what conditions are matters for more systematic theory development and empirical verification.

In sum, we have found that MSA has a robust, active, but also disturbingly incoherent research program. The next step is to rectify the situation by providing what it lacks. MSA needs perhaps fewer empirical studies and more systematic theory development. Our review has pointed to some possible avenues to add such rigor and coherence.

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Notes

1. Multiple streams has been referred to as a framework (e.g., Zahariadis, 1999, 2007), an approach (e.g., Zahariadis, 2014), a model (e.g., Travis & Zahariadis, 2002), and a theory (e.g., Zahariadis, 2003). In line with the most recent articulation of multiple streams, we use the descriptor of "approach."

2. Jones and Baumgartner (2012) argue that what is important about a policy process framework (or approach) is not "whether it is right or wrong … but the extent to which it stimulates further research" (p. 1). By this metric MSA is arguably the most successful of the prominent policy process approaches. Please note Google Scholar is known for duplications of citations, and as such, this number is illustrative only; the Google Scholar search was conducted on 11/02/2014.

3. Web of Science citation search was chosen over Google Scholar due to Google Scholar's high rate of duplications, limitations of citation export, and limiting citation search returns to 1,000.

4. Includes the following variant (and in some cases errant) publication years: 1983, 1984, 1995, 1996, 1997, 2002, 2003, 2005, 2006, 2010, and 2011.

5. We accepted a sampling error of 5 percent and an associated 95 percent confidence level. Sample size: $n = ([N-1][SE]^2 + PQN)/([N-1][SE]^2 + PQ)$ where N is the population size, SE is the standard error (.03 using a 95 percent confidence level, one-tailed), P is the expected agreement (80 percent), and Q is 1 - P. Lacy and Riffe (1996) argue that this method of conducting ICR is more rigorous than most conventional content analysis ICR testing protocols (Lacy & Riffe, 1996, p. 970). Round 1 ICR test sample size was 229 and round 2 was 131.

6. We do not analyze all 65 categories. Guiding categories were selected based on comparability to similar policy process framework reviews (Pierce et al., 2014; Weible et al., 2009). Specific variables were determined based on several dimensions, including interest of the researchers, projected interest of the reader, space limitations, and comparability to other studies.

7. Although coders came across many manuscripts in a variety of languages, only refereed journal articles available in English were used in this analysis.

8. This conjecture is also tacitly supported by the low number of research questions (80) and hypotheses (39) explicitly stated in the 311 MSA applications analyzed.

9. However, it is worth pointing out that a substantial body of research has developed on policy entrepreneurs that is, at least in part, derivative of MSA. Several of these foundational works were captured in our coding as MSA theory building pieces and thus not reported here. See, for example, Ackrill and Kay (2003) and Mintrom and Norman (2009).

10. We thank an anonymous reviewer for pointing out that some of these self-reported concepts are not all that new. For example, the "bureaucratic" and "political" entrepreneur have appeared in periods prior to that captured in our analysis. See Roberts and King (1991) and Schneider, Teske, and Mintrom (1995).

11. We use the term "illustrative" because Weible et al. (2009) and Pierce et al. (2014) use sufficiently different methodologies to make a direct comparison inappropriate.

12. Collier and Mahon (1993) extensively analyze the pitfalls of conceptual stretching and supply ways to address problems when extension and intension interact.

13. Articles studying regions abstractly, not specifying country (i.e., European Union ($n = 8$) and Africa ($n = 1$), have been included in this data.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web site.

Appendix A: Rules of Inclusion 1.20.13
Appendix B: Multiple Streams Project Codebook Guidelines
Appendix C: MSA 311 Application References