STRATEGIC POLICY INNOVATION AND FLASH FLOOD HAZARD MITIGATION:

THE TULSA STORY

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Introduction

The story of Tulsa, Oklahoma's triumph over the recurring threat of flash flooding is a dramatic tale that has been discussed at several natural hazards conferences and workshops in recent years (e.g., Flanagan and Associates 1994; Hinkle 1994). Tulsa, which once was vulnerable to repeated devastation of homes, buildings, and loss of life, undertook a major effort to diminish the destructive power of episodic flood events in its Mingo Creek watershed. In the wake of the 1984 Mother's Day flood, which incurred losses of $184 million in damages and 14 lives, Tulsa adopted an innovative program that enabled the city, in partnership with the U.S. Army Corps of Engineers (ACE), to design and construct an award-winning flood control system comprised of a network of landscaped detention basins along Mingo Creek, organizational changes in city government, and land use reforms that has signaled an end to the city's constant flood worries while serving as a model program for the nation (Hardt 1994; Patton 1993; Patton 1994).

A less well-known aspect of the Tulsa story, however, is the role of the individual people who made the city's comprehensive stormwater management program possible. While the changes that arose in the wake of the record-setting 1984 flood command attention, less well known are the sequence of events and the leadership roles that key individuals played in them, which collectively contributed to the comprehensive policy foundation upon which future activities and accomplishments would stand. When, in retrospect, the disparate strands of individual actions are woven together, the evolution of Tulsa's flood control policy takes on the appearance of a complex strategy that ultimately found the right *policy window* to be put in motion. In light of the lengthy incubation period in which the flood control program matured, and the number of individuals whose actions contributed to the program now in place, it is instructive to examine cases such as Tulsa's to improve our understanding of the policy innovation process and the factors that contribute to its success.

In this paper, an argument is made that Tulsa's response to its flash-flooding hazard represents a strategic type of policy innovation. While a clear paradigmatic shift from reliance on structural flood control solutions to nonstructural ones is evident from the history, a careful reading of that history also reveals the concerted efforts of several key individuals to facilitate such a shift within the institutional, legal, and sociopolitical constraints surrounding them. The respective roles of these policy entrepreneurs will be examined to clarify the different steps and stages involved in the policy innovation process, and to make clear what differences exist between strategic approaches to policy innovation and other forms prevalent in the literature. In order to frame the argument, that literature is discussed in the next section. Following this, the historical evolution of the Mingo Creek flood control project is described in which the salient activities of the policy entrepreneurs are identified. Finally, the implications of the Tulsa case for policy innovation for wider application are discussed.

Strategic Policy Innovation

How innovation in public policy, or policy innovation, occurs has been the subject of a growing amount of scholarly interest in recent years for several reasons. First, the federal government has been actively promoting the devolution of many of its programmatic responsibilities to the states and municipalities without

concomitant resources. Moreover, municipal governments have been increasingly subjected to a variety of unfunded federal mandates, many of them environmental quality requirements, which obligate them to do more with less. In addition, federal funding for public programs has been precarious in recent years while urban problems have continued to mount. The growing trend toward the privatization of public sector functions, which has ushered in the need to foster workable public-private partnerships, has also placed a premium on an improved understanding of the policy innovation process. Finally, understanding policy innovation is central to the national commitment to develop a more sustainable society. Whether or not a truly sustainable society is even attainable in our industrialized world, an improved understanding of policy innovation and the factors that can guide it toward success will become more valuable to the local and municipal governments that are the locus of most sustainable development activities.

Kingdon (1984) and Polsby (1984) were among the first researchers to examine the general patterns of policy innovation in government. Kingdon's well-known argument that the conditions for innovation are optimal when the politics, problem, and policy streams converge at a *window of opportunity* has been applied by several researchers in a variety of policy contexts (e.g., Birkland 1997; Rabe 1986). While the notion of a window of opportunity has penetrated both the policy analytic community as well as the general public's vocabulary, Kingdon's characterization of the policy entrepreneur as a participant who motivates policy change had not received very much attention by analysts until recently. Polsby's characterization of policy innovations as either *acute* or *incubated* shed light on the distinctive difference between innovations that evolve relatively rapidly over time with limited information and few decision makers, such as the US reaction to the launch of the first Soviet satellite, Sputnik, compared to those that require a good deal more time to accommodate multiple decision makers, conduct technical studies, and become more widely accepted, such as the movement toward economic rationality (i.e., deregulation) that has become a growing trend in federal government programs.

More recently, Behn (1988) characterized his view of policy innovation as *groping along* since it best describes the trial-and-error approach that many agency managers experience in the uncharted and chaotic course of finding workable solutions to their problems. Behn suggests that managers have a clear sense of their agency's mission, but lack the time, resources, and stable environment necessary to develop comprehensive workable solutions. Rather, they grope along toward a solution, building experience, information, and momentum to attain their ultimate success one small step at a time. In contrast, Golden (1990) found that a *policy planning* approach better addressed the experiences she examined in several human service organizations. The policy planning model differs from groping along due to the former's need for existing legislation that structures the innovation process, the existence of a clear idea and a method of implementation, a greater emphasis on time allocated to planning, and the limited amount of change expected from the innovation. Another valuable contribution is Sabatier and Jenkin-Smith's (1993) development of an *advocacy coalition framework* that defines the conditions under which policy change and learning are most likely to advance. The ACF model captures the value orientation of advocacy coalitions and describes the role that scientific and technical analysis play in policy deliberation and debate, but it tends to slight the role of individual policy entrepreneurs in the policy innovation process.

The role of the policy entrepreneur has been addressed by several researchers, who suggest that the ultimate success of an innovation can be traced to the strategic actions that one or more entrepreneurs motivate in the course of an innovation. Deyle *et al.* (1994) studied the evolution of state coastal erosion policy and found that entrepreneurs were essential to the success of policy innovations in coastal management for several reasons. In the coastal setting, effective entrepreneurs understood the context of environmental issues and their policy relevance very well. They also understood the importance of technical expertise and studies that provided a sound scientific basis for assessing promising alternatives. While they acted in response to Kingdon's window of opportunity, they were also quite skillful in helping to open a window when needed. In their study of school vouchers, Roberts and King (1996) found that policy entrepreneurs were frequently drawn from a variety of occupations, interests, and backgrounds.

To advance understanding of the innovation process, Roberts and King (1996) developed a typology of entrepreneurs and applied it to their voucher study. They found that a policy entrepreneur could participate in an innovation at one or more levels of involvement, but that the degree of participation and the professional career status of the entrepreneur could be used to further define the role being performed. For example, policy intellectuals typically help to foster new ideas or alternatives. Policy advocates can help to advance new ideas but also develop them, sometimes through a prototype demonstration. Policy entrepreneurs (as Roberts

and King define the term) motivate new ideas, demonstrate them, and implement them. Policy champions do the latter two steps. Policy administrators simply implement the innovation. Further specification can be assigned if the entrepreneur is employed in government (policy entrepreneur), holds a leadership position (executive or bureaucratic entrepreneur), or is publicly elected to office (political entrepreneur).

A recent review of leading policy innovations in the U.S. was reported on by Altshuler and Behn (1997) who used the Ford Foundation's annual competition in *Innovation in American Government* at Harvard's Kennedy School of Government as a database. Among other findings, the authors identified a dozen impediments to innovation that impede or prevent entrepreneurs from attaining successful implementation. These impediments are categorized as accountability dilemmas (who is responsible for innovating?), paradigm dilemmas (how can we be innovative thinkers?), analytical dilemmas (how much analysis should be done?), structural dilemmas (how do organizations stimulate innovation?), replication dilemmas (how do we transfer an innovation?), and motivation dilemmas (who will innovate?).

Using the same database, Borins (1998) analyzed the key success factors for all of the finalists in the Kennedy School database. Concerning environmental innovations in specific, he drew the following conclusions. First, environmental programs are holistic; they increasingly involve systemic thinking about the management of entire ecosystems. Second, environmental activists can be a valuable resource and support to policy entrepreneurs. Third, policy entrepreneurs should rely on market mechanisms and user fees to support and enforce environmental programs. Fourth, environmental innovations tend to involve politicians and public servants in different ways, with substantial movement across bureaucratic and political arenas. Fifth, planning and policy analysis play an important role in the success of environmental innovations. This list is instructive for the Tulsa case, since it suggests that environmental innovations necessitate more scientific and technical analysis than other kinds of policy innovations. It also implies that success flows from the ability of entrepreneurs to cross organizational boundaries and be able to facilitate the interaction of political and nonpolitical actors.

In sum, the literature provides several insights into the conditions for successful policy innovations. Clearly, a variety of policy entrepreneur types must find ways to overcome impediments that are contextual and dynamic. In the case of environmental policy innovations, research indicates that a systems view blended with a variety of perspectives can foster useful alliances with advocates as well as strategies for program design, demonstration, and implementation. Knowledgeable policy entrepreneurs thus often behave in a strategic manner in the way they address these challenges. It is this blend of strategic actions that are observable in the innovation process that is referred to as strategic policy innovation.

Mitigating Flash-Flooding Hazards in Mingo Creek

Tulsa's history of flash-flood hazard mitigation closely tracks and intersects with the national flood control experience at many different points in time. Accordingly, it has been convenient for authors to frame the city's trials and successes with its flooding problem within the specific eras of flood-hazard management that characterize the national effort in general. Flanagan (Flanagan and Associates 1994) and Patton (1993) refer to these eras as: the Structural Era of Flood Control (1928-1966); the Regulatory Era of Floodplain Management (1968 - 1978); and the Nonstructural Era of Floodplain Management (1979-present). As it is for many federal, state, and local government policy innovations, the national context for flood control planning and management is important to understand the opportunities and constraints that confronted local policy entrepreneurs.

Expansion into the Mingo Creek drainage area began during the post-World War II suburban expansion in Tulsa. A second population boom occurred in Tulsa in the 1960s, leading to increased urbanization of floodplains. Despite repeated flooding of these floodplain areas in the late 1950s, development continued nonetheless. Arkansas River flood control was addressed upstream of Tulsa with the completion of the Keystone Dam by the Army Corps of Engineers in 1964. The Mingo Creek drainage area was annexed into the city limits in 1966. During the 1960s, the Mingo Creek watershed experienced one flood event every two to four years. Increasing urbanization of the watershed causes each flood to be worse than its predecessor due to greater volumes of runoff. At the national level, concern about the limitations of structural flood control techniques led to legislation (1960 Flood Control Act) and an Executive Order on Floodplain Management (EO 11296) that encouraged floodplain planning, technical assistance, and mapping.

In 1968, the passage of the National Flood Insurance Act ushered in a new era of floodplain management. That year in Tulsa, the landscape architect Ian McHarg pointed out to the city's leadership that it was locating its parks on high ground and its homes in the floodplains. McHarg suggested that the city adopt an approach that echoed its own 1924 plan by creating a network of linear parks that would serve the dual function of abating flood hazards and providing for a community trail system. This advice was not heeded.

The City of Tulsa experienced a series of severe floods along Mingo Creek in the 1970s. The first of these floods occurred on Mother's Day, 1970. Flooding along Mingo and Joe Creeks caused $163,000 in damages. Tulsa joined the emergency program of the National Flood Insurance Program (NFIP) later this same year. The following year, Tulsa joined the regular NFIP program. Tulsa promised, as a condition of joining these programs, to adopt a new standard based on a 100-year flood and new land-use regulations. The next major flood occurred four years later. Flooding in April and May 1974 resulted in damages totaling $744,000. A storm on June 8 that year resulted in flooding along Mingo, Joe, Fry, and Haikey Creeks and $18 million in damages. Mingo flooded for a third time in 1974 on September 19.

The devastation wrought by this series of events catalyzed citizen action. Carol Williams, a Mingo Creek flood victim, formed a lobbying group with other flooded residents named Tulsans for a Better Community. Despite their growing numbers, the lobby met stubborn resistance on the part of the city's leadership. The city had no flood management plan and little interest in developing one. After the September flood, Bob Miller traveled to Rapid City to study that city's floodplain acquisition program. Upon his return, he presented a slide show to the mayor that illustrated the feasibility of relocating homes (Patton 1993). By 1975, the city had designed and begun the Mingo Creek Improvement Project, a limited channel project that included a right-of-way clearance of 33 houses that would protect 700 homes from floods comparable to those experienced the previous year.

The Memorial Day flood of 1976 was the most severe flood to that date. Ten inches of rain fell in three hours causing floods along Mingo, Joe, and Haikey Creeks. This flood led to three deaths and $40 million in damages. More than 3,000 buildings were damaged. Once again, Carol Williams pressed the city to take action, including a floodplain acquisition program. With the help of U.S. Congressman Jim Jones, funds for acquisition were secured through Section 1362 monies in the flood insurance law. This approach later became national policy. Tulsans for a Better Community merged with the citywide Homeowners Coalition that was a more powerful advocate for change. After this flood, the ACE began working with the City of Tulsa to find a solution to the flooding problem that included 10 miles of channels and 23 upstream detention basins. In sum, the City of Tulsa implemented several innovations.

- A moratorium on building in the floodplain was enacted
- The first full-time hydrologist, Charles Hardt, was hired. Stan Williams was directed to draft city policies with regard to floodplains and development.
- The city was allowed credit or reimbursement by the federal government for Mingo Creek construction work undertaken since 1974.

The following year saw the implementation of a series of flood control innovations.

- Comprehensive floodplain management policies, regulations, and drainage criteria were developed.
- Stormwater detention regulations were enacted for new development.
- An early alert and warning system were initiated.
- Master drainage planning for all major creeks was begun.
- An earth change ordinance was enacted in 1978, giving the city control over alterations made to Tulsa's landscape.

The next major flood did not occur until eight years later. The Memorial Day flood in 1984 was the most devastating flood in Tulsa history. Fifteen inches of rain fell during the nighttime. The flood accounted for 14 deaths, 288 injured, 7,000 buildings damaged or destroyed, and $184 million in damages. Damages along Mingo Creek accounted for 69 percent of the total. In the hours following the flood, newly elected Mayor Terry Young organized a team comprised of himself, City Commissioner J. D. Metcalfe, Ron Flanagan, Charles Hardt, Ann Patton, and Stan Williams to assume the leadership of the city's largest and most innovative floodplain clearance and mitigation program. A paradigm shift in the city's understanding of how best to

reduce flood hazards was now clearly underway. The work of this initial Flood Hazard Mitigation Team effort led to the following results.

- Three hundred flooded homes and a 228 pad mobile-home park were relocated.
- A joint City of Tulsa and ACE detainment basin project was begun.
- The Department of Stormwater Management was created in 1985 that centralized responsibility for stormwater programs.
- A maintenance program that cleared silt and debris from major creeks and tributaries was started in 1985.
- A stormwater utility fee was established in 1985.

The City of Tulsa and the ACE realized that a comprehensive, regional, long-term strategy was required. The goal of the strategy was to prevent flood events through a combination of structural and non-structural measures. Partnerships with local, state, and federal agencies were part of the regional flood control strategy of the City of Tulsa. The Mingo Creek Local Flood Control Project was completed in 1999. These policy innovations transformed Tulsa from one of the most frequently flooded cities in the nation into one of the least.

Policy Entrepreneurs

The story of Tulsa's struggle with flooding documents the presence of a large number of policy entrepreneurs, each of whom made an important contribution to the ultimate success of the Mingo Creek project. The nascent strategy that the entrepreneurs developed was designed to draw several policy themes together in order to produce a more coherent and compelling flood control program. In the course of time, the entrepreneurs learned much from the city's painful experiences with flooding and began to deploy more ambitious strategies that necessitated the development of an effective partnership with the ACE, access to more federal resources, increased flexibility in existing city ordinances and enactment of new ones that would address the system-wide aspects of the problem, and greater organizational capabilities and technical expertise to deal with the flood hazard in an effective and responsible manner. To illustrate more clearly how the different elements of this strategic approach worked together, Roberts and King's (1996) typology of policy entrepreneurs can be used to identify the types of policy entrepreneurs who were engaged in finding innovative policies to resolve Tulsa's flood hazard dilemma.

Two individuals who played a pivotal role as policy intellectuals for the Tulsa entrepreneurs were Ian McHarg and Gilbert White. McHarg, whose nontraditional views on the relationship between the natural environment and the design of built systems are known worldwide, was invited to Tulsa to educate the city's leadership about alternative ways to reduce flashflood hazards. Gilbert White, who has been the leading intellect in the national movement toward non-structural solutions to flooding hazards for several decades, provided the necessary encouragement and information that helped to guide the policy entrepreneurs' overall strategy.

Since the context in which the policy entrepreneurs operated was fairly fluid, it is not unreasonable that many policy entrepreneurs would change their jobs and even their careers in the period under discussion. Therefore, the classification of the entrepreneurs is divided two ways to bracket the periods associated with the most significant flood events: the 1976 and 1984 floods.

Post-1976 Flood Policy Innovations

Several people qualify as political entrepreneurs due to their actions in this period. The first of these is U.S. Congressman James Jones. Jones was one of the key people involved in getting the Water Resources Development Act passed. This had the far-reaching impact of allowing actions that Tulsa undertook in flood prevention to count towards its share of federal flood control projects. This act would become very important in 1984 when the ACE received authorization to work on Mingo Creek. Other political entrepreneurs included Norma Eagleton, Patty Eaton, and Robert Franden, who built upon the work of former Commissioners Bill Morris and Sid Patterson. Eaton and Franden, who were elected as commissioners in 1976, influenced several of the innovations that occurred. They were responsible for declaring a moratorium on building in the floodplain, establishing stormwater detention regulations for new development, establishing new floodplain

policies and drainage criteria, and hiring Stan Williams and the first city hydrologist, Charles Hardt (Patton 1994). They also encouraged the implementation of a rudimentary alert and warning system.

No individuals qualified as executive entrepreneurs during this period, but three people did qualify as bureaucratic entrepreneurs because they held formal, but not leadership, positions with the state or the federal government. Dell Greer became involved in the 1970s as a representative of the Federal Insurance Administration (which later became part of FEMA). He worked with people in Tulsa who were interested in solving the flooding problem. Greer worked with interested Tulsans, including Ann Patton, to address the cause of the floods, which in some cases meant removing houses from the floodplain (Greer 1999). He became involved in 1974 and remained involved until the mid 1980s. Stan Williams and Charles Hardt were hired shortly after the flood. For the next few years, they were heavily involved in working on flood issues. Stan Williams worked on ordinances regarding the floodplains and development with Hardt (Hardt 1998).

Several people can be classified as policy entrepreneurs due to their involvement with the flooding issues and the fact that none held a position in government at the time. Ron Flanagan, a former city employee and planning consultant, offered his services to the flooded residents. Before 1974, Flanagan worked on city zoning and planning issues for developers (Flanagan 1998). Beginning in 1974, Flanagan became intimately involved in the flooding problem along Mingo Creek. Flanagan, who helped educate the flooded residents about floodplains, was one of the people calling for a new method of flood control in the Mingo Creek watershed. Ann Patton was an activist. Working as a newspaper reporter, she covered flood stories and addressed the causes of the floods and the possible alternative solutions that could be employed to mitigate them. The articles she wrote encouraged new ways of approaching the flooding problem. Carol Williams was also involved with the citizens' movement demanding that something be done. Williams' house had been flooded three times in the mid-1970s, which motivated her to become very active in citizen groups, including Tulsans for a Better Community. She played an important role in organizing these groups and in educating them about flood issues. Finally, J. D. Metcalfe, president of Standard Industries, was responsible for helping organize the Floodplain Symposium in 1976 and inviting Ian McHarg to lecture at this presentation. Metcalfe took an active role in the flooding issues.

Post-1984 Flood Policy Innovations

Several of the people identified as entrepreneurs in the post-1976 flood innovations also qualified as entrepreneurs in the post-1984 flood innovations. Their classifications have been changed due to the different roles they played in 1984 and afterward.

Terry Young and J. D. Metcalfe were both political entrepreneurs. Both Young and Metcalfe were newly elected as Mayor and Street Commissioner, respectively. They assumed office only 19 days before the 1984 Memorial Day flood. They were responsible for several of the more significant innovations that were implemented during that time. Mayor Young called Metcalfe the night of the flood and assembled the first Flood Hazard Mitigation Team, which was responsible for developing the mitigation measures put in place following the flood. Mayor Young decided to move those houses that had flooded repeatedly out of the floodplain. He also played a critical role in getting approval to use federal flood insurance money, combined with City of Tulsa monies, in the home buyouts.

In the aftermath of the flood, Young and Metcalfe continued their flood-prevention activities. Together, they were able to sell the public on the joint City of Tulsa-ACE plan for detainment basins. Young and Metcalfe were responsible for the creation of the Department of Stormwater Management (Pepple 1999). In 1985, they started a maintenance program that would clear debris out of major creeks. They also created the Stormwater Drainage Advisory Board (SDAB), a citizens' advisory board.

Four people qualify as executive entrepreneurs: Stan Williams, Neal McNeill, Charles Hardt and Michael Buchert because they occupied leadership positions. Stan Williams was hired as an assistant city attorney as part of the Flood Hazard Mitigation Team in 1984. He worked with City Attorney Neal McNeill, another entrepreneur, on figuring out ways for Tulsa to legally accomplish the goals that Mayor Young had set forward. Williams worked closely with Hardt and Flanagan on the detention projects as well as securing funds for homeowner buyouts. McNeill's biggest contribution was the legal support for a $2 per month stormwater utility fee, which was implemented in 1986 and assessed on every house and business in Tulsa. McNeill arranged the billing method so that the fee was taken out first; people were forced to pay the stormwater fee or else their water supply would be curtailed (McNeill 1999). Charles Hardt, who had been working for the Wright-

McLaughlin Water Engineering firm in Denver, was hired by the City of Tulsa as a consultant after the 1984 flood as part of the Flood Hazard Mitigation Team (Hardt 1998). He brought the engineering experience he gained in Denver to bear on the Mingo Creek problem to provide a measure of legitimacy to the various projects. Michael Buchert started working for the Tulsa District ACE office in 1977 on possible flood control measures for Mingo Creek, specifically detention basins (Buchert 1998). This work played a large role in the ACE's offer to conduct a joint project with the City of Tulsa.

Two people qualified as bureaucratic entrepreneurs, having formal, but not leadership, positions with the government: Ann Patton and Carol Williams. Patton played a number of roles in the Mingo Creek saga. In 1984, she became an assistant to Street Commissioner Metcalfe and served as a motivating force for other entrepreneurs. Flanagan (1998) stated that Patton "had the energy of ten people." Patton's most important role was with the media. It was because of Ann's writings and contacts with the media that much of the public became educated about proposed changes (Flanagan 1998). Patton subsequently took a formal administrative position with the Department of Public Works. Carol Williams also became employed by the City of Tulsa, where she worked on natural hazard mitigation and neighborhood development activities for the remainder of her career.

Ron Flanagan, a policy entrepreneur, began working with flood victims in the early 1970s. He left Tulsa in 1978 to work in Denver for a water engineering firm. Returning to Tulsa in 1984, he worked on the Mingo Creek project and was a member of the Flood Hazard Mitigation Team. His plans and designs played critical roles in the Mingo Creek project. Stan Williams remarked that Flanagan was one of those who stressed the multiple-use aspect of the detainment basins (Williams 1999).

Many people were involved with the project who did not qualify as entrepreneurs. This should not suggest that their actions and accomplishments are not important; it is just that they were not involved with as many aspects of the project.

Discussion

As one can see from the preceding discussion, the mix of policy entrepreneurs changed significantly from 1976 to the late 1980s. Interestingly, there is evidence that four of Roberts and Kings' (1996) categories of policy entrepreneurship remained active during both periods with one category, executive entrepreneurs, growing rapidly in number as the solutions to the Mingo Creek flooding problem took final shape. The classification of policy entrepreneurs also illustrates the network of skills and interests that were brought together from federal, state, and local sources to address the flood problem, as well as the strategy by which that network was used to motivate ideas and mobilize resources. This is a key lesson that the City of Tulsa has learned from its struggle with flooding and it has acted to incorporate this knowledge into its organizational structure through the creation of new city departments and targeted programs. Significantly, Tulsa has demonstrated its continuity in political entrepreneurship with the leadership and involvement of its current mayor, Susan Savage, in FEMA's initiative in natural hazards mitigation, *Project Impact*.

This case study well illustrates the fundamental difference between environmental policy innovations and other kinds of innovations. The Tulsa case affirms Borin's (1998) general conclusions about environmental policy innovations and reinforces Deyle's (1994) suggestions that environmental innovations necessitate a good deal more planning and policy analysis to reduce the relatively high degree of uncertainty that is systemic to environmental issues. The key to successful flash-flood hazard mitigation lies in its holistic, or drainage basin, approach that incorporates the essential administrative and managerial components needed to sustain the system. In view of this finding, it is not surprising that the city opted to develop a new organizational structure to address its perennial flooding and related environmental issues. In addition, the entrepreneurs worked quite well with environmental activists, several of whom were actively recruited by the city to implement the innovations. In addition, the stormwater utility fee was adopted by the city as a key user fee to support the effective management of the flood control program. Fourth, the case illustrates the significant degree to which politicians and public servants were involved, and the frequent, if not continuous, transboundary movements that they undertook within the city's administrative bureaucracy to get their innovations adopted and implemented. While political leadership was uneven and inconsistent, several political entrepreneurs recognized the important role that executive entrepreneurs played in the adoption and implementation of effective solutions, and elected to work closely with them, both in the short and longer term planning horizons. Finally, the level of planning and policy analysis undertaken by the city, the ACE, and numerous consulting

firms underscores the need for effective scientific and technical information to guide the design, development, and adoption of environmental policy innovations.

As a result of these attributes, a strategic approach, even one that is network-oriented, would appear to make a good deal more sense to policy entrepreneurs than to *grope along* in an attempt to motivate marginal changes that might ultimately prove to be ineffective. A strategic orientation also enables policy entrepreneurs to develop effective ways to address many of the impediments that would be expected to thwart an innovation. A review of the Tulsa story shows how most, if not all, of Altshuler and Behn's (1997) dozen impediments to innovation were successfully overcome. Lastly, the Tulsa story reinforces more general frameworks for understanding policy innovation while it illustrates the important contribution that strategic entrepreneurship makes to our comprehension of the overall process, particularly in regard to environmental policy and our future prospects for attaining a more sustainable society.

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