Perceptions of A Crisis:
Application of Psychometric Theory of Risk and Kingdon's Three Streams to Hurricane Katrina and the Future of Climate Change

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On the morning of August 28th, at 7 AM, Hurricane Katrina made landfall on the beaches of Buras-Triumph, Louisiana. By 9 AM, the eye of the storm had passed over and moved 100 miles east, prompting local newspapers to print the headline "New Orleans Dodged a Bullet."[1] But what followed in the coming weeks, days, and months would turn the American consciousness towards disaster preparedness and the coming effects of climate-change enhanced natural disasters in the resulting years and decade. The impact of Katrina throughout all levels of government caused a major flashpoint that is still being felt and analyzed to this day.

Two theories in particular help to show why political officials chose to ignore the risk assessments of scientists and policy analysts about the danger shadowing over New Orleans and the Gulf Coast: Psychometric Theory of Risk and Kingdon's Three Streams. In this paper, I argue that the political stream ignored the risk perception of the policy stream because they did not share the same recognition. As such, it took an extreme focusing event (Hurricane Katrina) for the political stream to consider the risk posed by climate change-enhanced natural disasters in the Southern Gulf Coast. For effective public policies to be produced to handle these risks in the future, it is important for government officials to consistently consider the risk perceptions of the policy stream in order to create a window of opportunity.

What Happened In the Southern Gulf Coast

How the Perception of Risk Influences Our Reality

The general attitude amongst scientists prior to that fateful August morning was of ominous concern. By 2000, roughly sixty-two percent of New Orleans residents (389, 071

[1] Layzer, Judith A. 2016. *The Environmental Case*. Los Angeles [etc.]: Sage, 540

citizens in total) lived below sea level and two months prior, FEMA and the Louisiana Office of Homeland Security ran a week-long simulation of "Hurricane Pam" hitting New Orleans.[2] The results were damning: over one million people would have to be evacuated, a further one thousand people would be left behind, and there would be between ten to twenty feet of flooding throughout the city.[3] But what the simulation did not account for was the human error that would lead to the most costly environmental disaster in US history: "subsequent analyses revealed that shoddy engineering beforehand" as well as a lack of preparedness by all government agencies turned a critical situation into a catastrophe.[4]

Given the seemingly obvious danger of a hurricane devastating New Orleans, the question begs to be asked: what caused the nonexistent policy production that would have saved much of the Southern Gulf Coast? Simply, it was a lack of risk perception on the part of government officials that created a ticking time bomb throughout the region. This vital misstep is explained by the Psychometric Theory of Risk. According to Slovic, an individual's perception of risk can be quantified through "psychophysical scaling and multivariate analysis techniques" in order "to produce quantitative representations or "cognitive maps" of risk attitudes and perceptions."[5] People tend to judge risk on:

> (i) The hazard's status on characteristics that have been hypothesized to account for risk perceptions and attitudes…, (ii) the benefits that each hazard provides to society, (iii) the number of deaths caused by the hazard in an average year, and (iv) the number of deaths caused by the hazard in a disastrous year.[6]

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[2] Ibid, 537
[3] Ibid
[4] Ibid, 538
[5] Slovic, Paul. 1987. "Perception Of Risk". *Science* 236 (4799), 281
[6] Ibid

Slovic discovered that there are three heuristics, condensed from the above judgements, people use in order to assess risk. These same heuristics are key to discovering how, despite the recognition of the policy stream, the political stream failed to recognize the danger of a hurricane striking New Orleans.

The first heuristic is availability. It can be thought of as "an event likely or frequent[ly] [to occur] if instances of it are easy to imagine or recall."[7] For the policy stream, it was all too easy to imagine the devastation that would occur in New Orleans when a hurricane was to eventually hit. On the other hand, in what is termed the "Safe Development Paradox" by Burby, government officials believed that they had turned wetlands and other hazardous locations in the area into habitable environments. And indeed, they had, with over seventy-three thousand housing units added to the two largest parishes in New Orleans during the 1970s. But, despite these two areas being hit by nineteen hurricanes between 1973 and 2000, state and federal officials believed they had avoided the risk.[8] As noted by Paul Farmer, former executive director of the American Planning Association, the government's informal motto when it comes to development is **"**we will help you build where you shouldn't, we'll rescue you when things go wrong, and then we'll help you rebuild again in the same place."[9] *Critically, government officials did not see the risk of a storm hitting New Orleans because they were self-assured that they had avoided it entirely (and if it did hit, they believed they would have the resources to rebuild from the rubble)*.

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[7] Slovic, Paul, Baruch Fischhoff, and Sarah Lichtenstein. 1979. "Rating The Risks". *Environment: Science And Policy For Sustainable Development* 21 (3), 15

[8] Burby, Raymond J. 2006. "Hurricane Katrina And The Paradoxes Of Government Disaster Policy: Bringing About Wise Governmental Decisions For Hazardous Areas". *The ANNALS Of The American Academy Of Political And Social Science* 604 (1), 174

[9] Layzer, *Case*, 530

The lack of foresight that New Orleans was not protected enough leads into Slovic et al.'s second heuristic: overconfidence.[10] Despite that "the incidence of disaster losses is primarily borne by local residents and businesses, one would expect that avoidance of losses would be a high priority for local officials."[11] However, due to the overconfidence of local and federal workers, this was not the case, ultimately resulting in what Burby deemed the "Local Government paradox."[12] Perhaps the most serious preparedness issue was the failure of the Corps of Engineers to properly drive the steel piling that held the levees deep enough into the soil.[13] On behalf of the Orleans Parish Levee Board, the Corps of Engineers constructed protection for a one-hundred-year level hurricane, rather than a two-hundred-year level, after the cost of the project grew too high.[14] As a result, the steel pilings were driven only to 17.5 feet deep, where a deep layer of thick, unstable peat soil was buried. This led to a gap between the flood wall and the levee, that, once the hurricane hit, breached levees and flooded the city.[15]

Unfortunately, this was a number of issues created by overconfidence on the side of the political stream. This overconfidence was, in part, a product of the next heuristic: the Desire for Certainty. The Desire for Certainty is defined by Slovic et. al as when people "view their world as either perfectly safe or as predictable enough to preclude worry."[16] Local and federal officials viewed the risk of mega-hurricanes as being a problem for the future; New Orleans and Gulf Coast had been protected enough to weather the literal storm that would eventually hit the area. Or, so they thought. However, what the political stream failed to realize was that they were

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[10] Slovic et. al, "Risks," 16
[11] Burby, "Paradoxes," 178
[12] Ibid
[13] Layzer, *Case*, 546
[14] Burby, "Paradoxes," 179
[15] Layzer, *Case*, 546
[16] Slovic et. al, "Risks," 18

engaged in the "Projection Bias," or the "tendency for subjective forecasts about the future to be biased toward what is being experienced and felt in the present."[17] According to Meyer:

> the projection bias implies that a contributing factor [in New Orleans] may have been the mere difficulty people likely had imaging an environment vastly different from the one that they were currently facing, or how they would feel when faced with such an altered environment.[18]

The Desire for Certainty heuristic and the Projection Bias help to explain the issues of federal and local government officials in handling rescue and relief operations once the waters had settled in New Orleans. *The political stream had not imagined the devastation that a super-hurricane would cause on the Southern Gulf Coast and, as a result, had not conceived of how monumental the relief and rescue operation would be to return the area back to the status quo.*

One piece of evidence of the lack of preparedness was the enormous amount of miscommunication between federal and local officials. From the get-go, federal and local workers were standoffish; the federal officials waited for local officials to request help and aim relief efforts in the most devastated parts of the city. However, the destruction was so colossal and vast that local officials could not direct efforts towards where help was needed the most.[19] Neither had planned for a disaster of this magnitude. Furthermore, miscommunication extended to the highest offices in both Louisiana and the country. Both advisors to Louisiana Governor Kathleen Blanco and President George W. Bush questioned the motives of the other side. The President's advisors debated whether or not the federal government should send in forty thousand troops as well as take over relief operations from the state government. Meanwhile, the

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[17] Meyer, Robert J. 2006. "Why We Under-Prepare For Hazards". In *On Risk And Disaster : Lessons From Hurricane Katrina.*, 1st ed., 162. University of Pennsylvania Press: Philadelphia, PA, 162
[18] Ibid
[19] Layzer, *Case*, 548

Governors' advisers were concerned about the potential political slant if the federal government took the reins.[20]

As shown by how bewilderal both federal and state officials were, the three heuristics of risk assessment help to illustrate how and why the political stream ignored the forewarnings of the policy stream: "Disagreements about risk should not be expected to evaporate in the presence of 'evidence.' Definitive evidence, particularly about rare hazards, is difficult to obtain. Weaker information is likely to be interpreted in a way that reinforces existing beliefs."[21] Even though the policy stream had ample evidence that devastation was likely to occur when a hurricane eventually landed on the beaches of the Gulf Coast, this information was not enough to convince officials of the need for preparedness. However, what was convincing enough was the wake Katrina left in its path and the mistakes that escalated the catastrophe. As pointed out by Meyer, people "are much better at learning from the mistakes we actually make than those we *almost* make."[22] In order for change to occur in the political stream in regards to the risk perception of hurricanes, Hurricane Katrina was a necessary, if not tragic, focusing event that resulted in more eyes paying attention to the risk than ever before.

Katrina as a Focusing Event

Why it created a Window of Opportunity

According to Kingdon, a focusing event is when a "crisis or disaster...comes along to call attention to [a] problem" and creates "a powerful symbol that catches on."[23] Birkland further extrapolated on the subject:

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[20] Layzer, *Case*, 542
[21] Slovic et. al, "Risks," 38
[22] Meyer, "Under-Prepare," 154-155
[23] Kingdon, John W. 1994. *Agendas, Alternatives, And Public Policies*. 2nd ed. Boston: Longman, 94

> A focusing event is an event that is sudden; relatively uncommon; can be reasonably defined as harmful or revealing the possibility of potentially greater future harms; has harms that are concentrated in a particular geographical area or community of interest; and that is known to policy makers and the public simultaneously.[24]

Hurricane Katrina checked all of the boxes: it was relatively sudden, it was a powerful natural disaster that had not been experienced in the area for sometime, revealed the potential for further climate-enhanced natural disasters to cause harm in the future, exposed the dangers of hurricanes in the Southern Gulf Coast, and was immediately and inextricably entrenched in the public and professional consciousness. As argued by Cairney and Zahariadis, Hurricane Katrina was the perfect focusing event "for issues such as ecological degradation, poverty, race, and inadequate federal emergency management systems to come to the fore."[25] The policy stream in Louisiana saw it as the opportune period to convince the political stream to demand long-requested federal assistance from the federal government; they sought funds upwards of thirty-four billion dollars that would shore up the Louisiana coastline as well as build a new system of levees that would be tall enough to protect the state from a Category-5 hurricane.[26]

Part of what makes Hurricane Katrina (and climate-change enhanced natural disasters in general) such powerful focusing events is that they are signals of what is to come in the future as they have the power to embed themselves in the public consciousness. As illustrated by Slovic, "the informativeness or 'signal potential' of an event, and thus its potential social impact, appears to be systematically related to the characteristics of the hazard and the location of the event within the factor space."[27] If an accident or event is widely understood and mundane (such

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[24] Birkland, Thomas A. 1997. *After Disaster: Agenda Setting, Public Policy, And Focusing Events*. Washington, D.C.: Georgetown University, 54

[25] Cairney, Paul, and Nikolaos Zahariadis. 2019. "Multiple Streams Approach". In *Handbook Of Public Policy Agenda Setting*, 1st ed., 101. Cheltenham, UK; Northampton, MA, USA: Edward Elgar Publishing.

[26] Layzer, *Case*, 550

[27] Slovic, "Perception," 284

as a large car wreck), it does not produce much public attention. However, "a small accident in an unfamiliar system (or one perceived as poorly understood)... may have immense social consequences if it is perceived as a harbinger of further and possibly catastrophic mishaps."[28] Crucially, Katrina was "no small accident;" it resulted in two-hundred billion dollars worth of economic losses and was the most expensive natural disaster in American history.[29] Furthermore, much of the American public did not understand the influence of climate-change in magnifying the effects of the hurricane.

Given Katrina's gargantuan fiscal impact, it is logical it also created a colossal social impact as well, creating a window of opportunity for policy to be produced. The storm ingrained in the American mindset the need for disaster preparedness. This is best seen in the following years in New Orleans after the disaster. The Brookings Institution and the Community Data Center concluded that New Orleans was positioned to become safer due to a rise in civic engagement following Katrina.[30] The Lower 9th Ward, the hardest hit of the neighborhoods in New Orleans, in particular sought to build more sustainably. This ultimately led to the city council approving a new disaster preparedness master plan in 2010, with a focus on sustainability and the protection of the most vulnerable neighborhoods.[31] However, the most salient piece of information to come out of Katrina was the need to protect against the effects of climate change in the future. Katrina is the perfect model for understanding the importance of risk perception and how it can be applied to the battle against man-made climate change.

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[28] Ibid
[29] Layzer, *Case*, 555
[30] Ibid, 556
[31] Ibid, 557

The Future

The Implications of Katrina in a Climate-Changed World

As concluded by Layzer, "the foremost challenge is not predicting catastrophes but preparing for them."[32] Like Hurricane Katrina, climate change is an issue that requires concentrated effort to prepare for. And, similarly, not doing so would lead to catastrophic desolation across the world. As noted by Graham, the stories of survivors provide ominous, ironic signs of the climate-affected future:

> Here, we confront the inseparable connection between global climate change, apparently small and incremental acts of consumption and expectation, and the very structure and shape of contemporary urban civilizations. Perhaps the most powerful microcosm of this vicious circle in action comes from some stories about survivors of Katrina. Isolated, powerless, and abandoned in the floo[ded] streets of New Orleans, in unbearable heat, many kept themselves cool by sitting in air-conditioned cars with engines on—until, of course, their gas ran out. Amid a storm probably made more intense by global warming, cars thus provide islands of cool while throwing out more heat and more greenhouse gases.[33]

If Katrina is a signal of the world to come in the future, then it is important to acknowledge the need for resiliency and sustainability. As commented by Barbier, "resilience is the new aim — against short-lived natural disasters that have immediate and often extreme impacts, such as flooding and storm surges, and against long-term climatic changes that have more gradual impacts, such as sea-level rise, saline intrusion and erosion."[34] No longer can countries focus on short-term issues such as simply recovering from natural disasters. *Instead, they must keep one eye on the present and one eye on the future if they wish to adapt to the rapidly changing environment.*

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[32] Ibid, 561
[33] Graham, Stephen. 2006. ""Homeland" Insecurities?". *Space And Culture* 9 (1), 66.
[34] Barbier, Edward B. 2015. "Policy: Hurricane Katrina's Lessons For The World". *Nature* 524 (7565), 286.

Ultimately, the ruin caused by Hurricane Katrina could have been avoided. There are too many ifs to list: *If* the political stream had listened to the policy stream, *if* New Orleans had been properly protected, *if* relief efforts were not mired in chaos, perhaps some of the suffering could have been avoided. But, if New Orleans had not been annihilated as it was, it would be difficult to imagine that the risk of climate-change enhanced natural disasters would be as focused on as it is now. It took the destruction of New Orleans to remind the political stream of the necessity to effectively and actively consider the risk perceptions of the policy stream. And if the world wishes to avoid such misery and sorrow, it is all too important to apply the lessons of Hurricane Katrina to the issue of climate change in the future.

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