

A Mitigation Tale Of Two Texas Cities

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Introduction

Galveston and Corpus Christi are cities that share many similar geographic features. Situated in the Texas Gulf of Mexico coastal zone (Figure 1), Galveston is located entirely on a barrier island, Galveston Island, while mainland Corpus Christi's population has expanded out to its adjacent barrier islands, Padre Island and Mustang Island. Both cities rely on a single causeway¹ to connect their barrier islands to mainland transportation routes. Corpus Christi is ranked fifth largest port in the nation in total tonnage.² Historically Galveston was also a major port, but diminishing capabilities to compete with other centers caused its port operations to decline. Nevertheless, the economic health of Galveston is firmly tied to its port operations, which like those of Corpus Christi, feature a concentration of oil and gas and/or petrochemical activities. These port activities significantly heighten the risk from technological hazards. The same geography that makes these cities desirable as ports and places to live also places them constantly at risk from hurricanes and storm surge. Yet despite their similarities, Galveston and Corpus Christi differ in their perspectives on the present and their visions for the future.

Figure 1: Map Of The State Of Texas Showing The Relative Locations Of Galveston And Corpus Christi
 (Source: www.worldtravelguide.net/data/tex/texmap.asp)



This paper argues that in addition to the physical vulnerability of these two cities, Galveston is made more vulnerable by its social history. Conversely, Corpus Christi has worked towards less vulnerability through its social history. Out of each city's social history has emerged an habitual 'way of doing' local government. Both Corpus Christi and Galveston have developed 'ways of doing' in local government that directly affect their patterns of decision-making. Corpus Christi's 'ways of doing' have for the most part, facilitated responsible progressive development, that is, its leaders have initiated civic-minded change and welcomed new ideas for the betterment of the city. Civic-mindedness has focused on community, sustainability and innovation. Galveston on the other hand, has been hindered by power constraints that have made it less able to engage in civic-minded progressive development.

The importance of social context in how communities manage their hazard vulnerabilities is not a new idea. The shift in sociological studies of disasters in the 1970s from a focus on physical attributes to definitions of disaster within a social context is noted by Quarantelli (1978), observing that "...there is a social response to the social disruption" (1978: 3). Social elements are a significant factor in community recovery after disaster, and they may in fact be more responsible for

how a community recovers than physical and technological elements (Dynes and Quarantelli (1989); Nigg (1995). In the same vein, Mileti (1999) brings a systems perspective to the disaster literature, seeing the impacts of disaster as being the result from interactions between systems, namely the 'earth's physical systems' (the natural physical environment), the 'human systems' (the social environment) and the 'constructed system' (the built environment). In calling for a comprehensive approach to risk assessment and disaster management Weichselgartner (2001) considers both socioeconomic and biophysical concepts of vulnerability. The inclusion of socioeconomic factors along with natural and technological hazards provides a snapshot of the vulnerability of a community, as it currently exists. Missing however in the previous literature, is the historical context which has shaped socioeconomic factors and in which they are nested. Also not captured, are the historical relationships of the community to identified physical/ technological hazards and hazard events. While this has been captured in the disaster subculture literature, it is somewhat of a sideline.

Mileti (1999) includes population, culture, technology, social class, economics and politics in the list of what constitutes human systems. A mention under the heading of culture is given to the social vulnerability paradigm, which accounts for some individuals being made more vulnerable by social, economic and political factors. Certainly increased vulnerability has been linked to social status indicators (i.e. poverty, gender, race/ethnicity), but while these factors may be present, they are not necessary to the kind of vulnerability that can emanate from a community's 'ways of doing', which in turn derive from a community's politics, economics and social history.

Noting the lack of historical context in disaster literature, Lübken and Mauch (2004) suggest that the inclusion of historical elements is useful to the social construction of disaster vulnerabilities. While some European studies have adopted an historical approach, American studies in disaster have been slower to follow suit. An exception to this is Oliver-Smith's (1999) study on post-earthquake allocations and resettlements in Peru.

Social values and group interests evolve as a dynamic process over time, and evaluations of these attributes should consider their historical developmental paths. An historical 'way of doing' has profound influence on situational understandings and expectations

(what is conceivable, do-able, acceptable.) These in turn inform the framing of issues and decisions that follow (Goffman, 1986; Dietz, Stern and Rycroft, 1989; Benford, 1993; 't Hart, 1993). Over time, a 'way of doing' is socially constructed—and over time 'a way of doing' shapes vulnerability.

A focus on 'the way of doing' in local government is important because it is here that decisions on planning and mitigation are made (Godshalk, Brower and Beatley, 1989; May and Williams, 1986; Burby and May, 1997). According to Prater and Lindell (2000), the fact that local government is the point of delivery for hazard policy makes it imperative that communities develop the political sophistication and technical expertise needed to get adequate hazard policy adopted and implemented in their jurisdictions. Many researchers have noted the gaps between policy adoption and implementation of mitigation measures at the local government level (Berke and Beatley, 1992; Wyner and Mann, 1986; Lindell, 1997; Burby and May, 1997). The social context of local government has invariably been implicated, but less attention has been paid to the historical development of the social context and understanding the implications of its construction.

In his essay on crisis management, 't Hart acknowledges the importance of probing "...deeper into issues of authority, legitimacy and power..." (1993:47), to understand the effects of these on structural and cultural organization. Communities are organized around economic, political and social units, and it follows that the study of incidents that disrupt these units should consider the effects that economic, political and social environments have on the disruption (Dynes, 1978; Wenger, 1978; Blaikie, Cannon, Davis and Wisner, 1994). Olson (2000) suggests that disasters should be analyzed as political events, because of value-laden allocation of resources. However, the power to allocate, particularly at a time of disruption, is strongly linked to the perceived and real legitimacy to do so (Dynes, 1978). The absence of legitimacy, or the failed perception of legitimacy then, is a circumstance that renders impotent an organization's ability to respond and/or co-ordinate the response of other community organizations. It follows that when organizations responsible for hazard management display failed legitimacy, community vulnerability is increased. And I would suggest that this kind of vulnerability is not episodic but rather a chronic, cumulative condition.

In making the argument that a community's social history shapes the 'way of doing' local government thereby affecting community vulnerability, I present brief case studies of Galveston and Corpus Christi. These cases are organized around three units of analysis: social history, economics and politics. I build each case from a variety of sources including archival materials, literature, web sources, and interviews with key city officials.³ A section on each city's riskscape follows, and I conclude with a discussion on how the social history, economics and politics unique to each city, translate to their respective approaches to planning and mitigation.

Galveston

Historical Overview⁴

From Indian settlement, to pirate stronghold, to refugee port of entry, Galveston has had a colorful past. During the late 1800's Galveston flourished as Texas' largest city and port.⁵ As the major shipping center of the southwest United States, it was known as the world's largest cotton port—the 'Queen City of the Gulf' (City of Galveston website). Adding to the shipping capabilities of Galveston was the consolidation of several family-owned wharf companies into the Galveston Wharf and Cotton Press Company between 1854 and 1859. With efficient rail and steamship connections to major urban centers, Galveston retained dominance over the growing shipping capability of Houston. But this dominance would not last.

For many years infighting amongst founding families and regional incompatibilities denied Galveston of state and federal funds to deepen the harbor and channel. Undaunted, a select group of Galveston businessmen formed a financing and political consortium, and in 1888 were successful in achieving a federal appropriation of \$6,200,000 to deepen the harbor and build protective jetties (*ibid.*). In response, Houston lobbied for federal funds over the next few years to build a deepwater channel of their own. Using the vulnerability of Galveston to hurricanes as a means of securing their own funding, Houstonians argued that the investment of funds "...or population on an unstable edge of nature" (McComb, 1986: 68) would be quite unreasonable.

The claim that Galveston was an ‘unstable edge of nature’ proved accurate when the Great Hurricane of 1900 struck, killing well over 6,000 people (some estimates indicate around 8,000 killed).⁶ This disaster was the single most significant event in Galveston history. The focus immediately shifted from expansion to survival as Galveston secured disaster relief funds and redirected internal financing toward the enormous tasks of raising the downtown and east end levels of the island several feet higher and building a seawall.

While Galveston was preoccupied with restoration and survival, investment dollars bypassed the island and flowed into the deepwater wharves of Texas City in 1904, and then the Houston Ship Channel in 1916. Little by little, the manufacturing and shipping expansion of Houston, the specialization of Texas City in oil, the growing importance of other Texas ports as a direct result of the oil boom in the 20’s and 30’s, and the downturn in production of cotton, all contributed to the shrinking importance of Galveston as a major port center. Offsetting this trend for a brief moment was influx of approximately 50,000 refugees that Galveston handled between 1906—1914, making it second only to Ellis Island as an immigration processing center. To the relief of many Galvestonians, WWI brought an end to the wave of human cargo.

By the early 1920’s Galveston’s permanent population had declined. Most of the founding families had relocated to Houston. Thus began a trend in absentee landownership and an external hold on resources that has been a political constraint on Galveston ever since. Along with frequent economic downturns and declining port activities, these factors contributed Galveston’s chronically eroded financial foundation.

Economics⁷

Central to Galveston’s historical economic health was its port activities and commodity distribution. The lion’s share of business ownership was held by a few wealthy Galveston families. ‘Outsiders’ or those who were not ‘BOI’ (born on the island) were hard pressed to find business opportunities.

In the early years, primary commodities were cotton and other dry goods, but after the deepening of the harbor in 1888 to 22 feet,

grain elevators were built. It was however, a continual struggle for Galveston to retain port dominance against Indianola and Corpus Christi, and the hurricane of 1900 caused tremendous displacement of business, population, manufacturing and port growth to Houston. The 1920s and 1930s brought some benefit from the oil rush, and oil storage and shipping emerged. During WWII, the port shifted from commodity handling to supplies shipments and post war overseas food relief. Efforts to remain marginally competitive through the 1960s and 1970s ultimately meant expanding port capabilities. In 1975, Galveston received aid from the US Army Corps of Engineers to deepen the ship channel to 40 feet. Shipping commodities expanded to include chemicals, crude oil, fresh and frozen foods, iron and steel, and plywood.

The privately held Galveston Wharves and the publicly held port holdings were plagued at regular intervals with bond indebtedness and loan default. Through a closed network of community financing and negotiated tax relief from the city, Galveston Wharves remained afloat, continuing to distribute investment returns to elite shareholders. The real property of the wharves company was sold to the city in 1940 for a tidy profit. Galveston Wharves retained management control of contracts without the burden of taxable real property—the City of Galveston Port Authority took over the real property but inherited tax impoverishment and highly leveraged debt. Galveston Wharves as a contract management company, continued to be a joint arrangement between the City of Galveston and ‘old Galveston families’.

Old Galveston families were also successful in lobbying for much of the prime downtown real estate being declared ‘historical’ and exempt from taxation (Dillon, 1995). These properties were placed into protective hands as museums, parks, and historic preservation buildings—the revenues generated going to family-named foundations. An established practice of over-generous tax abatement to attract business development has further eroded the tax base.

A better understanding of future goals for Galveston from the perspective of city officials, and insight into the cultural significance of being ‘born on the island’ (BOI), was derived from interviews in 1999 conducted with the former Director of the Galveston Port Authority; the Interim Director of the Galveston Port Authority; the President of the Galveston County Economic Development

Alliance; the Mayor of Galveston; and the Executive Director of the Galveston Chamber of Commerce.

The Mayor, the President of the Economic Alliance, and the Interim Port Director, all took the position that Galveston's economic survival necessitated piggy-backing onto a Houston-Texas City 'mega-port' project sometime in the future. The economic and political power of the Houston-Texas City mega-port partners, as one respondent claimed, would overcome the historical constraints on Galveston's development and would "...drag city administrators into industrial development". Another respondent articulated a 'free ride' mentality regarding quick money available from tourism development. The President of the Chamber of Commerce (not BOI but island resident) was the only official to refrain from declaring a reliance on the mega-port idea. He saw a necessity for industrial diversification and outside development as being key to attracting skilled jobs and a stable permanent population that would over time build up the retail and service sectors, expand middle income settlement and housing demand, thereby expanding the tax base.

All respondents commented in some manner on the historical constraints on Galveston's development, with one respondent stating that "local authority is still run by absentee families", and another calling it the "iron rule by a few families". Citing the practice of declaring downtown parcels of land 'historic' and therefore exempt from taxes, respondents acknowledged the deleterious effects on infrastructure by an eroded tax base.

In the few years since those interviews, there have been some changes in Galveston. The city official who held the vision of diversified development has left the area. The City of Galveston Port Authority verging precariously on the brink of bankruptcy over several decades, failed in their attempts to increase revenues through additional bond floats. In 2001, continued indebtedness and dwindling port revenues caused the publicly held port property to be absorbed by the Houston Port Authority (HPA) in exchange for debt relief, four months operating expense cash reserve and the promise of a port facility fire station to be constructed. The Port Authority search committee found the "right candidate" (in the words of the Interim Port Director), and placed him at the director's helm in time for port takeover negotiations with Houston. In the deal with HPA, Galveston

is to receive the benefit of spillover business from Houston. The push for tourism moved forward and a new cruise complex was built to cater to passengers. In 2000, the port became a cruise ship destination, adding a promising number of inbound vessels to its port statistics in 2001 and again in 2002. In terms of vessel volume, this compensated for a drop in cargo/lay ships coming into the port. Retail and services have continued to skew toward the tourism niche, and aesthetic improvements beautify the downtown and seawall areas 'seen' by tourists. Seasonal home and upscale condo development flourishes along flat, unprotected strips of beachfront. These changes however, have not been the result of better stewardship or a change of heart regarding economic and developmental sustainability. Perhaps this is because fundamentally, things haven't changed.

The Mayor of Galveston continues to hold the title and to promote a quick money agenda. With the recent absorption of the Port of Galveston by the HPA, the idea of piggyback benefits from a mega-port continues to germinate. Private lands remain out of the reach of diversified outside industry. Infrastructure in Galveston continues to decay and little has been done in the way of affordable housing. Improvements to the City's tax base have not been realized and there continues to exist a generous disparity between the seasonal rich residents and the permanent poor.

Politics⁸

The political power derived from owning the means of economic activity within a community has been historically evidenced in Galveston. Economic diversification occurred only within individual portfolios of the elite to offset their risk of economic downturn and to secure main sectors of potential growth. Profits were not reinvested in community works, but rather in privately owned ventures.

Attached to the white wealth of Galveston was a small population of black slaves. The period between 1850 and 1870 was particularly salient to political representation in Galveston because during this short period, blacks transitioned from the bonds of slavery to official positions in Galveston city administration. This was facilitated by the emancipation of slaves, the capture of Galveston by Northern forces during the civil war (1862 and again in 1865) and occupation

by forces until 1870. On-going conflicts between Southern civilians and white Northern militia resulted in the police force being replaced in 1867 by a black police force. Unionist influence paved the way for black representation in Galveston in the following years: county representative to Constitutional Convention (1868); integrated public school (1870); Sergeant-at-Arms (1871); Justice of the Peace (1882).⁹

Sweeping the Southern United States at the turn of the century was the city commission movement, a parceling of local government functions into commissions headed by appointees. An appointment to a commission was a political plum—a reward for political support. After the 1900 hurricane, Galveston quickly adopted this new model of government. At the same time, elite women of Galveston (in their own version of suffrage) took managerial positions in relief organizations attempting to clean up the slew of post hurricane human misery (Miller and Sanders [eds], 1990).¹⁰ The ‘old boy’¹¹ mentality prevalent in the commissioner format, found sturdy opposition as female-headed relief and church organizations brought pressure to bear on the Board of Commissioners. Commissioners appointed and controlled by the wealthy businessmen of Galveston, were often confronted and confounded by issues and demands emanating from the wives of the businessmen. The wives prevailed in their pressure and the result was health and human services available to all races/ethnic groups as Galveston rebuilt. Out of this, various philanthropic foundations emerged to provide tax benefit to the elite and basic services to the community. Galveston was incorporated in 1939 under a Commissioner format and the ‘old boy’ mentality flourished once more.

Popularity of the Commissioner form of government waned and in 1961 Galveston adopted the council-manager form of local government. One of the goals of the council-manager format is to diffuse any centralized special-interest power by facilitating representative citizen participation. This is done by electing candidates who run ‘at large’, or candidates that run in individual districts, or a combination of both. Additionally, the functions of the mayor are limited. Galveston initially opted for an ‘at large’ model. This had the effect of limiting equal representation of each district. This model prevailed until 1993, at which time the city was required by court order to divide into six districts.

Galveston's racial composition in the 1960s was predominately white, with a minority black population.¹² An Hispanic population had not been present in Galveston since the 1800s, but migration of Mexican farm workers into Texas in the late 1930's re-established a small Hispanic base population on the island of about 1,200. By 1990, the Hispanic/Latino population had grown to 12,649 people and by 2000 to 14,753 people (US Census). Population ratios in 2000 were roughly 2:1:1 (White:Black/African American:Hispanic). Population figures into 2002 indicated a continued slow growth for the Hispanic population.

An examination of the 2003 city council membership and their profile information reveals an appearance of perfect political correctness: representation from the three major racial groups, and male and female members. An Hispanic mayor heads the council. Two members represent the 25% Black/African American population and both of these members are active in social service endeavors within the black community. The four white members have homogenous interests in business/ industry development and aesthetics. But with a mayor who is also a Galveston Wharves trustee, and considering the limited and part-time role of the mayor, are Hispanic interests truly represented on the council? With four out of seven council members sharing highly similar interests, how equitable is representation? Galveston recently appealed to the Attorney General to permit city redistricting. Excerpts from the official response letter dated February 4, 2002 speak to these questions:

The record shows that it was not until the replacement in 1993 of the at-large election system by the court ordered single-member district system that African-American voters achieved a significant level of representation on the city council reflective of their voting strength in the city which continues to this day [...] We also note your statement that the 2001 Census revealed that in the ten years since the 1990 Census, Hispanics supplanted African-Americans as the predominant minority group in the city. However, your letter does not explain the significance of this demographic shift with regard to the essential question in the Section 5 analysis: Do the proposed

changes reflect a purpose to retrogress minority voting strength, and do they result in retrogression? Similarly, the results of the 2000 city election, while certainly relevant to our analysis, would be significant if they indicated that racial bloc voting was no longer an operative factor in city elections. However, Mayor Quiroga's reelection, when considered together with our previous analyses of racial bloc voting in the city (referred to in our December 14, 1998, objection letter) fails to persuade us that voting in the City of Galveston is no longer racially polarized.

Ralph F. Boyd, Jr.,
Assistant Attorney General, Civil Rights Division
(www.usdoj.gov/crt/voting/sec_5/ltr/l_020402.htm)

Other goals of the council model are to allow for greater efficiency and equity in the administration of city government. This efficiency comes through the hiring of a professional who has been specifically trained in city management and in a variety of city scenarios. "Under Council-Manager government, qualifications and performance - and not skillful navigation of the political election process - are the criteria the elected body uses to select a professional manager."¹³ The City Manager of Galveston¹⁴ is BOI and received his education from local universities. He has been the City Manager since 1997, and previous to that, Director of Utilities, City Engineer, Director of Public Works, and Assistant City Manager—all in Galveston. It is reasonable to say that there is a mutual investment between the City Manager and Galveston. Council meeting agendas and minutes show a tacit abdication of power by council to the City Manager—a circumstance that runs counter to the council model that "... establishes a representative system where all power is concentrated in the elected council" (ibid.). With the equitable representation of Council in question and Council's abdication of power, Galveston continues to be a ripe environment for the 'old boy' mentality.

The Galveston Riskscape

After the 1900 hurricane and the push to construct protection from future events, the rebuilding focus in Galveston was on getting

back to ‘business as usual’. Other than the advent of some social programs, little in the way of rethinking ‘the way things were done’ occurred. Local power and government in Galveston continued to be the ‘old boys’ BOI enclave. The City suffered chronically from under-funding for works and operations maintenance. Monies raised for city capital improvements required bond issues—on more than one occasion Galveston came close to bond default and bankruptcy. The tax base in Galveston dwindled as more and more property was deemed ‘historic’ and not taxable.

Neither commercial nor residential development has produced the much-needed revenue to repair infrastructure and improve city capabilities in vulnerability and loss abatement projects. Instead city officials continue to offer tax-abatement deals.

The City abatement policy requires a minimum of \$500,000 capital investment and the retention or creation of 5 jobs for four years of abatement after construction, an investment of \$1 million and 10 jobs for five years of abatement, \$1.5 million and 10 jobs for 6 years, and \$2.5 million and 20 jobs for 7 years of abatement. The City policy, as well as the others that follow, also provides for 100% abatement during construction for a maximum of two years.

www.galvestonistdtx.com Accessed: 10/05/03)

Real estate development deals build more seasonal waterfront homes on sandy flats to the southwest and wetland adjacencies on the west side of the island—Galveston spirals toward increased vulnerability. With every hurricane season comes increased risk:

... much of the damage in the area was beach erosion, which undermined the roads and foundations on the west end of Galveston Island. “Houses were under water. Half of the homes were basically caved in [...] The houses that were on the beach were undermined by the currents” [Quote from Mayor Quiroga]

CNN.com “Claudette cleanup under way”. 07/17/03

Accessed 10/7/03

The city's planning department has been aware of this vulnerability for years. Contained in the drafted Comprehensive Plan are strong recommendations for more stringent mitigation measures for hurricane hazard evacuation routes and increased storm water capacity, upgrades to existing infrastructure, limitations on area population density, and limitations on land use in target areas. The plan notes that the density limitations projected in the 1988 Comprehensive Plan¹⁵:

[...] were based upon expected major investments in roadway reconstruction of FM 3005...to expand capacity and raise roadway elevations; as well as the creation of a new west end bridge/causeway to the mainland in the vicinity of 8 mile road. These capacity improvements have not been made, nor has the construction of an additional bridge/causeway to the mainland been determined to be feasible. Consequently, continued west island development may continue to pose even more severe threats to public safety...

(City of Galveston, CP 1988 - Objective 1.3)

These improvements have yet to be made. With population density expanding in unprotected areas and inadequate evacuation routes,¹⁶ Galveston is another tragedy waiting to happen.

Figure 2 illustrates the profound vulnerability of Galveston Island and much of the adjacent low-lying mainland to storms and surge. The island is approximately thirty miles long, with the seawall protection starting at the eastern tip and extending approximately ten miles along the westward shoreline. In 1904, the seawall extended three miles - just beyond the urban area. Over the twentieth century, several extensions were made—the last one in the 1960s. Today, twenty miles of now developed shoreline remain unprotected. With the exception of that area protected by the seawall, risk analysis indicates that evacuation of the island and low-lying mainland should occur in category 1 hurricanes. Evacuation should occur for the area behind the seawall in Category 2 hurricanes. According to Ruch (1981), Galveston's evacuation time was 29 hours, given transportation capacity and predicted growth rate to 1984. Evacuation capacity has not improved and the increased population density by

year 2000 suggests many more hours needed for evacuation. During Claudette (07/15/03), a voluntary evacuation order¹⁷ was given roughly 14 hours in advance.

Figure 2: Map Of Galveston Island Showing The Location Of The City Of Galveston In Relation To Nearby Barrier Island And Mainland Communities. (Source: www.gceda.com/cities.htm).



Well before the main effects of the storm hit however, the evacuation route to the causeway washed out. The bridge over San Luis Pass was closed because the low-lying mainland was awash with surge. There was nowhere for residents to the south and west ends of the island to go. Claudette was only a Category 1 hurricane and it made landfall over 100 miles south of Galveston. Yet damage was sufficient for city council to declare a state of disaster.

Compounding the riskscape in Galveston are the technological risks associated with port and petrochemical activities. On the 2001 Toxic Release Inventory (TRI), Galveston County (which also includes the Texas City petrochemical hub) was the fifth largest producer of toxic releases in Texas. Industries reported a total of 14,312,583 pounds released in that year. Of these 6,472,230 pounds were air emissions.

In terms of port traffic, variety of vessel composition and maintenance, and the high incidence of people/hazard adjacencies, Galveston is a worst case in risk analysis (Merrick, 2003; Harrald and Merrick, 1999). As Figure 2 shows, the entrance to the port is via the

Houston Ship Channel—one the busiest marine lanes in the world. Yet while Galveston has its eyes on an increasing reliance on the oil and chemical industries, little foresight has been given to technological mitigation measures. New offshore facilities on adjacent Pelican Island for liquid bulk transfer and storage, as well as additional repair and service centers for offshore rigs, service vessels and barges are being constructed. Although promised in the Houston Port Authority takeover, the port still has no specialty marine safety facilities. Instead it relies on a network of independent organizations including the city fire department, city police, a private local contractor (oil spills), Galveston County fire department, private terminal operators (some with in-house fire fighters and/or agency agreements with oil companies), oil and chemical companies (some with in-house fire fighters), and the US Coast Guard. This assortment of response organizations is loosely bound by ‘assistance agreements’, however the specific protocols of these agreements are evidently unclear:

The Coast Guard will render assistance as available, based on the level of training and the adequacy of equipment. The Houston-Galveston Captain of the Port intends to maintain this traditional “assistance as available” posture. The Coast Guard is not prepared to relieve local fire departments of their responsibilities. Paramount to preparing for marine fires is the need to integrate regional response planning and training efforts, particularly among federal, local fire departments and port authorities.

(Source:http://www.globalsecurity.org/military/agency/dot/gru_galveston.htm10/03)

The role of the Office of Emergency Management in Galveston under conditions of natural or technological disaster is also unclear. It has recently been renamed the Emergency Operations Center (EOC) and is located in the Public Safety Building. While the new official website bears the OEC abbreviation, an agency update on a tropical storm referred to itself as the OEM (TS Larry, 10/03/2003). The old website contained the following information about the emergency management protocol: under emergency conditions Galveston’s

OEM defers to county OEM, which interfaces with H-G National Weather Services, H-G DEM and State and/or Federal agencies as warranted. According to the Galveston County Emergency Management Services official website, this protocol is still in place. However, the link to the County OEM website has been removed from the new official website for the Galveston EOC, as has the information on emergency management protocol. It provides the name and telephone number of the Emergency Management Coordinator in the Galveston EOC, a mission statement, a statement of general responsibilities of the emergency coordinator, and a statement regarding the function of the center. Although website information suggests an integrated emergency response model in that the primary function of the EOC is coordination of "...fire, police, civil defense effort, emergency medical service, public works, volunteers, and other groups contributing to the management of major emergencies or disasters" (City of Galveston web site), the level of actual integration is questionable. Confusions exist where clear agency agreements and consistent public information are needed.

Implications Of History, Economics And Politics On Vulnerability In Galveston

The evidence of physical vulnerability brought about by geographic location and the technological hazard cluster, is quite clear for Galveston. This multi-faceted vulnerability becomes more problematic given the historical context in which factors of economics and politics interplay.

The chronic dependency created by a weak "local authority still run by absentee families", has in turn produced functional apathy and muddled delineations of responsibility. This is evidenced in a confused communications within and between government departments, a planning department whose recommendations are ignored, a reliance on external financial and service-related aid, an inability to build a healthy local financial autonomy through a stable growth tax base, an unhealthy appetite for quick injections of cash flow from seasonal niche developers, the use of funds on aesthetics instead of community reinvestment and the building of infrastructure, the practice of taxing the poor while property in the

high rent district is designated exempt...the list goes on. The state of dependency that is so much a part of Galveston's social history necessarily impacts on its ability to handle responsibly the burdens of hazard vulnerability. The absentee and seasonal rich control resource allocations to the betterment of business interests, and the full time residents of Galveston including the permanent poor bear the burden of rotting infrastructure, grossly insufficient evacuation provisions, unemployment, housing shortages and an urban population density accelerating urban decay. While it is true that the burden will be borne disparately by individuals because of socioeconomic circumstance, it is important to realize that socially created vulnerability is created by and visited on the community as a whole. Galveston has yet to be emancipated from its historic 'ways of doing', and because of this, the city and its residents face heightened vulnerability.

Corpus Christi

Historical Overview¹⁸

Corpus Christi's history is populated by men with 'big ideas'—entrepreneurs and bounders who gained and lost fortunes in promoting their individual visions of Corpus as their jewel of the gulf. These entrepreneurs believed in diversification and brought with them the knack for partnerships and external financing. In the late 1870's, Corpus was still a village—ripe for promotion. Over the next few years Corpus burgeoned with development and population at the hands of a few legendary men. But this period of growth would be short lived.

The economic crash in 1893 returned Corpus Christi's population to the meager 4,500 it had been before the boom. But it would not be long before Corpus once again embarked on a plan of mammoth proportions—a deepwater port. In 1898, the lobbyist/mayor of Corpus Christi in 1913 and a newly appointed congressman carried this dream to Washington, D.C.. By 1909 government engineers had decided on Harbor Island, one of the barrier island chain. The vulnerability of that location was clearly illustrated when a 1919 hurricane pummeled Harbor Island. More studies ensued and three potential sites were finally selected: Aransas Pass, Rockport and

Corpus Christi. Corpus Christi lobbied hard in Washington while local entrepreneurs boosted support at home with a navigation district bond float—the city prevailed. It had taken almost 30 years and several false starts, but determination and vision promoted the dream of a deepwater port to reality in 1926.

While the fight for a deepwater port was going on, other innovative changes were happening in Corpus Christi. In 1898, City Council voted to install 70 incandescent power amps to improve lighting quality and reduce the constant fire hazard from oil lamps. In 1909, a plan by a local judge for a seawall began to circulate. Population had increased from 12,811 in 1900 to 29,262 in 1910. The need for a seawall plan was confirmed by a 1919 storm and voter interest was rekindled. Work began in 1924 on the breakwater. By the early 1930's there was a vision for a promenade and seawall, but no money. In 1938 and 1939, Corpus Christi voters again approved two consecutive bond issues. It was no secret that beautification of the bay area was a concern, but beyond that, better infrastructure design became a key element in the project. The elevation of the bayfront fourteen feet above sea level and an extensive storm sewer system in the downtown area were completed by 1941.

Historical trends in vision, tenacity and innovation partnered with the desire of community leaders to further their own interests through the betterment of community life, bestowed on Corpus Christi the reputation of being a progressive city—one with persistent resolve to maximize opportunities in the present while looking for new opportunities in the future.

Economics¹⁹

A 'share the wealth' attitude developed from the earliest entrepreneurial activities in Corpus Christi. Investing and reinvesting in the community became a 'way of doing'—although many brought and generated wealth, few made and retained it. Names attached to major endeavors—'Lott's folly' (the Tex-Mex Railroad), 'Ropes Pass' (an attempt at dredging a recreational channel across Mustang Island), the 'Timon Plan' (the seawall conception), 'Cactus Jack' (the congressman who worked for 23 years to bring a 25 foot port channel to fruition), 'boy wonder' Miller, lobbyist and former mayor—show

that Corpus Christi had its fair share of ‘policy entrepreneurs’.²⁰ And there were others who spread their money and influence around to the betterment of Corpus Christi, and are recognized on dedication plates around the city.

Early on, the community of Corpus Christi had a clear vision of what their city should look like and that its sustainability and economic health would depend on building protective infrastructure.

The *Caller* in 1890 featured a profile of how the city might look at the turn of the century.

It forecast building a seawall ‘500 feet out from the shoreline, filling up back of this wall and utilizing the ground’ [...] A story in 1939 said storm protection was the primary purpose, but it noted that the seawall would give Corpus Christi a bayfront ‘second to none in point of beauty’...

(Corpus Christi *Caller Times*, “Seawall was built to hold back ocean”, M. Givens, 10/27/99)

From the start of major transportation projects in the mid-1800’s (Corpus was the main shipping point of cattle), to the seawall and deepwater port facilities by the mid-1900’s, the city underwent enormous development. The oil gush in Texas at about this time hugely impacted the wealth of Corpus Christi. The second half of the 1900’s saw more ambitious projects with the addition of a port turning basin and the dredging ship of the channel to 40 feet. Major highway development, bridge and causeway construction followed funded by partnership dollars from community taxes and federal funding.

When the downturn in the oil industry occurred in the 1980s, Corpus realized that it had to expand its options in economic development. The decision to pursue ‘clean industry’ shifted focus to high tech industry. According to the Mayor,²¹ the local labor pool was being developed to meet the need of ‘high tech’ employers, through working with the community college, and with the expansion of the Texas A&M University system into Kingsville and Corpus Christi. In 2000, *Forbes Magazine* ranked the city No.101 out of 200 best business relation cities in the nation; in high tech industry clusters, Corpus ranked No. 63 (Tom Whitehurst, *Caller Times*, May 29, 2000).

While the oil/chemical industry in Corpus Christi is in ‘maintenance’ mode according to a port official,²² it continues to provide approximately 90% of the port’s revenue, constitutes most of the port vessel activity and is the second biggest employer (about 30,000 jobs). The largest employer is the military with two bases in the immediate area.

In 1999 Corpus was focusing on improving and expanding infrastructure, cruise facilities, the downtown marina, a major airport expansion and water supply. By 2003, the new airport was complete, a water pipeline built, the cruise facilities expanded with major urban renewal adjacent to port property, improvements to infrastructure made, and a marina redevelopment planned and currently before council for approval. Also in 2003, Corpus Christi was one of ten recipients of the All-America City Award—the premiere national community award that recognizes integrative civic management and developmental progress. Corpus managed to do this without eroding its tax base.

Buildings, structures, fixed machinery and equipment, and site improvements are eligible for tax abatement for five years following the completion of construction. Project must add at least \$2 million to property tax rolls on completion of the abatement, or must have a minimum capital expenditure of \$250,000 if it is a rehabilitation project.

(<http://www.cctexas.com/> Accessed: 11/12/03)

Politics²³

Shortly following its days as a fledgling trade post and then military outpost, the village of Corpus Christi attempted to incorporate. In 1846 the county of Nueces was formed and Corpus Christi was named as its county seat. However, because there was no election of officials, the incorporation was void. In the next several years there was virtually no city government. But as Corpus Christi grew and attracted more people, businesses and services, leaders emerged from the community and Corpus was reincorporated in 1852. The city’s charter, reflecting principles, policy, functions and organization of city government, was adopted in 1876 (City of Corpus Christi official website).

With a new mayor (called ‘wonder boy’) in 1913, Corpus Christi forged aggressively ahead with modernization. City amenities and services mushroomed from partnered funding: private investment and public dollars. And then came the really big projects: the seawall, restructuring and re-grading downtown access routes to accommodate the raised level of the shoreline and seawall, dredging of the ship channel and the turning basin. With each new project, city officials became increasingly adept at maximizing tax and bond dollars with external money.

In the 1970’s through the early 80’s, Corpus Christi enjoyed the profits from the boom in the oil business. But the availability of this money had the adverse effect of deskilling city officials. No longer were savvy partnership finance agreements necessary. No longer was economic diversity a linchpin concept in Corpus’ developmental plans. Growth in other sectors slowed as dependency on easy oil revenues increased.²⁴ Growing income disparity and less attentiveness to social service needs undermined the years of shared pride that the constituency had had in their city. The oil downturn in the 80’s was a wake-up call to further diversify and once more employ far-sightedness in participatory administration, economic development and city planning.

The current Mayor²⁵ commented on that time when local government was not responsive to growing social and economic concerns, and by inaction, crippled Corpus Christi’s potential. He noted that in more recent years, the political atmosphere in local government has changed. ‘New blood’ with extensive outside experience is now sought for administrative positions. New to Corpus Christi, these individuals have no ties to the previous period of complacency. They are future-oriented and focused on what is best for the community.

Corpus Christi has a council-manager form of local government that disperses responsibility and representation throughout the administration team. It also has a very active full time mayor. There are eight council positions; 5 members representing voter districts, and three members who, like the mayor, are elected ‘at large’. While Corpus Christi City Council cannot be held up as an example of balanced racial representation, it is evident from information on the City’s official website, that there is a balanced diversity of political interests and representation from diverse income sectors.

Population distribution by race according to the US Census (2000), placed Hispanics in the majority at 54%, Whites comprised 39%, and Blacks/African Americans comprised 4%. Defined by race alone, there is no representation on city council of smaller minority populations. And the presence of only two Hispanic members on council in 2003 does not quantitatively represent the now over 54% Hispanics living in Corpus Christi.

There is however, strong accord between the interest areas on Council and the political interests of diverse social economic sectors in the community. From big business and economic development, to community relations and crime prevention; from social service programs to tourism and aesthetics; from job training programs and trade unions to corporate management concerns—there are many voices on city council that represent a constellation of community interests. Yet they share a single vision of a “...city that is moving forward, that is vibrant and puts a priority on creating growth”

(Editorial, *Caller Times*, 03/08/03)

When Corpus Christi went looking for a new City Manager in 1997, they hired a professional ‘headhunter’ firm to pre-screen candidates. The candidate ultimately selected was “...known as a creative thinker who brings community groups and bureaucrats together to solve problems. [...] When money seems nonexistent for a multi-million dollar project, he finds it. And he’s regarded as a deft negotiator...” (la Morte, *Caller Times*, 05/31/98). Considering Corpus Christi’s history of securing partnerships for ambitious ventures, the match between the new City Manager and council goals seemed strong. But perhaps the autonomous qualities that made the City Manager a ‘deft’ negotiator, worked against him in his dealings with a city council that demands full participation and knowledge in all aspects of city management—the charge of non-disclosure abruptly ended his tenure with the city in February 2003. The Mayor was elected for a fourth and final term, but not without the following pre-election admonishment to local government in the *Caller Times* (ibid;):

[I]n moving forward, the mayor and the council ought to understand that the process that led to [City Manager's] ouster saw a significant weakening, and potential erosion of the council-manager form of government as it has operated in this city and as it should continue to do.

The Corpus Christi Riskscape

The physical vulnerability of Corpus Christi to natural and technological hazards is comparable to that of Galveston. Yet this 'comparable' vulnerability is significantly mitigated by a team approach to city administration that fosters innovation, technical sophistication, and community involvement.

From a 'share the wealth' entrepreneurial mentality in community development, has grown a community belief and practice in setting and accomplishing goals. There is a complimentary facilitation between a civic willingness to participate in problem solving and a very capable local government, vigilant in its responsibility to all of its citizens. The evidence for this claim can be seen in healthy financial partnerships, in a well-maintained infrastructure, a diversified and stable economy, job opportunities, and a proactive civic will that translates to innovative decision-making. Corpus Christi repeatedly has regarded problem solving as a function of opportunity.

The growth of the petrochemical industry in Corpus Christi also saw the growth of specialized expertise in dealing with emergencies. This, combined with an established relationship with the military and a developmental perspective favoring partnerships, teamwork and innovation, produced an Office of Emergency Management (OEM) that today oversees a highly integrated multi-agency incident management system (a newer and friendlier term for incident command system) during times of emergency. Formerly housed in the Police Department, the OEM has recently moved to the Fire Department. As the OEM website notes, "hurricanes, fortunately, give us warning, but there are other risks that threaten Corpus Christi that can occur without warning" (City of Corpus Christi). As a result, a shift in preparedness focus onto those risks that have no warning has taken place. Out of fifteen fire stations located in the Greater Corpus Christi area, six are located in close

proximity to industry and five are located along I-37, adjacent to the petrochemical corridor (Figure 3).

Figure 3: Area Of Petrochemical And Port Related Industry Concentration In Corpus Christi And Approximate Locations Of Selected City Fire Stations (Source: maps.yahoo.com and City of Corpus Christi (Fire Department) website).



Specialized equipment housed near the corridor includes: brush truck, hazmat truck, heavy rescue unit, communications van and boat. While explosions, emissions and spills are the responsibility of private companies that either have their own in-house fire/hazmat specialists, and/or who have contracted with the Refinery Terminal Fire Company, because such incidents can deliver impact to adjacent communities, city units stand ready to assist and handle community-specific needs.

During an emergency and on order from the City Manager, the Office of Emergency Management (OEM) activates the Emergency Operations Center (EOC), which coordinates the activities of local government and non-government emergency management agencies. The OEM evaluates response capabilities, directs resources, and initiates calls for external aid, while a constant flow of information

comes into and out of the center. It is from the EOC that information to the public is disseminated.

Hurricane Claudette came ashore almost mid center between Galveston and Corpus Christi the morning of July 15, 2003. For weeks preceding this event, city crews had been inspecting the drainage system in preparation for hurricane and flood season. Public awareness of a new evacuation plan had been built over months. The EOC readied to activate as the storm approached and recommendations for evacuation of Padre and Mustang Islands came at 11:00 am, July 14. Corpus Christi Office of Emergency Management requested that the Texas Department of Transportation open an additional lane on the JFK causeway to expedite the evacuation of tourists and residents from the island before the storm hit. By afternoon, city officials felt that a direct hit from the storm was unlikely and decided not to recommend evacuation of the city. According to the City Manager, evacuation on the mainland would not be necessary with a Category 1 hurricane (James Ross, *Caller Times*, 07/14/03). Wind speeds reached 85mph within the 140 m radius impact area, and the causeway was subjected to high waves and surge. The Office of Emergency Management tracked the storm, disseminating coherent, accurate and timely information through government and media outlets to the public. In high-risk areas, people heeded the call for evacuation—they secured their property and left. Corpus was spared any property or infrastructure damage, in part because the city and its people were prepared. This synchronized preparation is the result of learning from past events. Recent adjustments to hurricane preparedness have included a protocol for reversal of I37 with the immediate, accurate dissemination of this information to the public, and a new comprehensive evacuation plan dividing the city into sectors that systematically evacuate using specified routes that disperse urban center traffic away from routes most critical to island and adjacent mainland evacuation. Both adjustments had multiple government departments and media working together to create and publicize these protocols.

In the area of chronic risk, The City of Corpus Christi has become proactive in risk management. According to the Toxic Release Inventory, Nueces County industries reported 6,097,364 pounds released in 2001. Despite a petrochemical concentration in Corpus Christi, the city has consistently been in ozone compliance with EPA

(Environmental Protection Agency) standards. Mayor Neal attributed this compliance to property buyouts by the petrochemical industry to create a ‘buffer zone’, and to the city’s complimentary rezoning program.²⁶ Moreover, Corpus Christi has been proactive in working with industry to achieve better air quality. The Corpus Christi Air Quality Group, established in 1994, promoted the installation of vapor recovery units with port industries. Following the significant success of this program, the Pollution Prevention Partnership arm of the Air Quality Group was formed to work with smaller business and the public. In response to significant and consistent reduction in emissions over three years, the EPA agreed to flexible attainment for Corpus Christi, allowing the city more control over monitoring its industrial sector and maintaining compliance.

While Corpus Christi can be regarded as responsibly progressive and an example of the way things ‘ought to be done’, the city’s vision is not entirely without flaw. On the one hand Corpus Christi has taken full advantage of the many emergency management resources available through city agencies, state and federal agencies, the military and private industry. In the areas of innovation, preparedness and response, Corpus Christi is exemplary. On the other hand, there is a fundamental failing where mitigation is concerned. Information on the Emergency Management web page states:

Mitigation is taking action to reduce potential disaster damages to the community BEFORE a disaster threatens. It is the first phase of disaster planning and operations. Hazard Mitigation activities focus on enhancing our knowledge of hazards, understanding their consequences, and implementing appropriate actions designed to reduce those consequences to save lives and reduce damages. Hazard Mitigation is essentially the common sense application of knowledge to save lives and prevent damages from occurring.

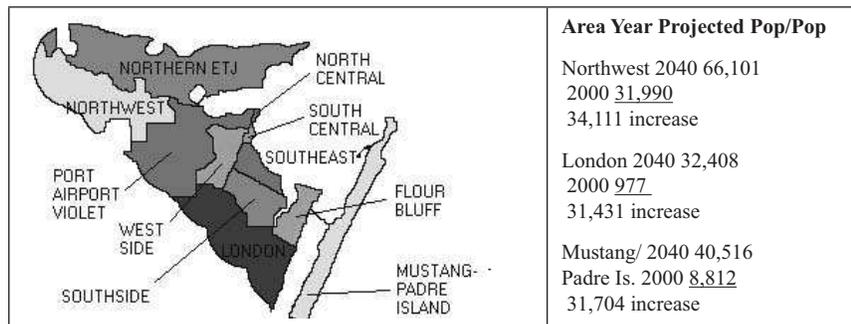
(City of Corpus Christi official website)

This ‘common sense application of knowledge’ has not found its way into the Comprehensive Plan for the city—and that is where sustainability and mitigation issues need to be addressed.

Responsive to federal mandates, Corpus Christi's Planning Department has incorporated broad environmental protection policy into land use measures. However, like most other cities, city planning in Corpus Christi is driven by development. While there is evidence that land use and zoning are informed by environmental limitations, the plan more specifically addresses urban design, transportation, public services, and economic development. Thus hazard mitigation and therefore issues of sustainability are not addressed in the Comprehensive Plan. This has been a long-standing problem. A case study of Hurricane Allen in 1980 noted the same disjunction between development and long-term mitigation (Rubin, Saperstein and Barbee, 1985).

Projected area growth figures to 2040 (Figure 4) indicate that areas of highest growth will be: the urban Northwest area, the sparsely populated London area along the shoreline of the leaside barrier island channel; and Mustang and Padre Island—precisely the areas most vulnerable to hurricanes and storm surge. Now under heavy development, these are the same areas targeted for concern in 1980 by Rubin et al. (Ibid.).

Figure 4: City Of Corpus Christi Area Development Overview. (Source: www.ci.corpus-christi.tx.us/?fuseaction=main.view&page=479).



Implications Of History, Economics And Politics On Vulnerability In Corpus Christi

Corpus Christi met disaster with renewed determination to make the city bigger, better and more resilient. The grand projects of sewers, water systems, transportation and electric streetlights were not spontaneous acts, but rather, examples of a coherent vision shared and acted upon

by a community for the community. Fiercely independent and to some degree isolated, Corpus Christi had to rely on bravado, innovation and determination to accomplish the grand scale ventures that shaped its importance and built its resilience to the natural hazards it faced. The leaders of Corpus Christi did not pin their implementation times on federal or state funding. They actively pursued such funding, but in its absence, went ahead anyway—sometimes raising the money through limited joint venture speculation; other times, raising it through taxes and bond issues. Corpus Christi citizens were willing workers and financial collaborators. Out of this history, developed a ‘way of doing’ that sought partnerships and external expertise.

Corpus Christi is politically sophisticated and increasingly technologically savvy. It has both governmental and private specialized emergency management capability. It operates as a precision instrument; a strong governmental instrument with vision, a team approach, and extra-local experience. Corpus Christi is proactive in its response to federal and state policy change. This proactive approach confirms the independence that Corpus Christi strives to maintain, while at the same time, a seamlessness between levels of government is facilitated by interagency collaboration. Corpus Christi has numerous strengths in the areas of hazard management, which mitigate its vulnerability to natural and technological hazards. One weakness, however, is in the economic pull of development over a more prudent constraint in high-risk areas. The pervasiveness of development in vulnerable areas impedes the progress toward sustainability, and this is the one factor that works against excellent mitigation efforts and a ‘way of doing’ that has facilitated them.

A Comparison Of Social Contexts

As we have seen in this work, social values and group interests are vastly different for Galveston than they are for Corpus Christi. These differences lie not so much in physical attributes as they do in social developments over time. They are evidenced in the practice of local government as compared in Table 1. Corpus Christi has developed expertise and sophistication in local government, building civic-minded competence in managing that city’s vulnerabilities. By comparison, Galveston has not.

Table 1: Comparative Summary Of ‘Ways Of Doing’ Local Government In Galveston And Corpus Christi.

Galveston	Corpus Christi
‘Old family’ money—closed system focus on expanding existing fortunes; family alliances.	Entrepreneurial money—open system focus on expanding economic foundation.
Elitist-directed benefits.	Community-directed benefits.
Absentee power presence.	Empowered community.
Weak mayor; weak council; autonomous city manager.	Active mayor; strong council; responsive city manager.
Display of political representation.	Functional representation.
Puppet government.	Responsive/accountable government.
Significance of BOI.	Significance of new blood.
History of ‘commissioner’ form of government—reformatted to council-manager.	Exclusively council-manager form of government.
Reliance on outside financial support.	Partnered financing and internal financing.
Focus on tax abatement and waivers.	Focus on loss abatement and tax base growth.
DEPENDENT	PARTICIPATORY

I have argued that Galveston’s dependency on external sources of leadership, be it in funding, planning, mitigation efforts and other phases of disaster management, is rooted in historical constraint in expertise, political sophistication and development of leadership in local government. This constraint is the result of a pervasive presence of an external power elite—a power elite that has orchestrated the failed legitimacy of its local government. In contrast, Corpus Christi developed along entirely different lines, having a frontier history of fiercely independent leaders who were determined, community-oriented and innovative. A history of community pride in being a city that could get things done developed and perpetuated a local government that is highly responsive to its constituents. The ‘way of doing’ in Corpus

Christi, is partnership—between citizens, between the city and its citizens, and between the local government and state/federal agencies. These partnerships recognize and validate the legitimacy of this city’s administration to adopt and implement policy.

My primary purpose has been to present economic and political elements from Galveston and Corpus Christi, within their respective historical contexts. These elements, in combinations peculiar to each of Galveston and Corpus Christi, have contributed to unique ‘ways of doing’ city administration and management. Their ‘ways of doing’ determine the capacities of these local governments to adequately manage their vulnerabilities to hazards. This has important implications for the delivery and implementation of federal and state policies, particularly if the trend is to develop local capacities toward sustainable development, and mitigation against and recovery from disasters. In research aimed at better facilitation of policy adoption and implementation, it is necessary to identify not only the gaps that exist between policy adoption and implementation, but also why those gaps exist. A way to address the ‘why’ is for researchers to broaden their focus to include the historical development of ‘ways of doing’ local government. This refocus and what is learned from it can educate at all levels. It can provide greater insight for policy makers into how vulnerabilities are heightened or mitigated by those socio-historical elements that inform local decision-making. These insights can benefit federal and state practitioners working with local implementers, in the approach and level of understanding they bring to the process of translating policy to local implementation. At the local level, a better understanding of how their social history shapes decision-making might show local leaders where and how change is possible.

Notes

1. Galveston Island also has a bridge connecting the Southwest portion of the island to a long narrow peninsula of low-lying mainland at San Luis Pass. The city of Galveston is located on the Northeast tip of the island. The majority of the island’s population is dependant on the I-45 northbound causeway connection to the mainland.
2. www.portofcorpuschristi.com/StatsYearly.html
3. Field data from research for MMS-Coastal Marine Institute

study, Louisiana State University, Dr. Joachim Singelmann, P.I. Interviews in January and July 1999. Field data used with permission and with thanks. See also Singelmann et al. (2001) regarding port development. Full citation in references.

4. Unless otherwise indicated, the material for this section is taken from The Handbook of Texas Online (1999). Full citation in reference section.
5. M. Givens (Corpus Christi Caller Times reporter) claimed in “Corpus Christi History”, that Indianola was a bigger port than Galveston during the late 1800’s thus countering the Handbook of Texas Online claim. However, the standard of comparison was unstated by Givens.
6. McComb (1986) suggests that total loss of life was over 8,000. This figure would have included residents, visitors and populations in adjacent island communities. This figure is corroborated by Hughes (1998). Most references to the 1900 hurricane use loss of life figure of ‘over 6,000’.
7. Unless otherwise stated, information in this section is taken from The Handbook of Texas Online (1999). Full citation in reference section.
8. Unless otherwise stated, this section taken from McComb (1986). Citation in reference section.
9. Source: Handbook of Texas Online “Galveston County”. Full citation in reference. Also note that the usage of ‘black’ in describing African Americans is in keeping with the literature of the period.
10. Elizabeth Turner in Miller and Sanders (1990) credits relief efforts and the emergence of WHPA (Women’s Health Protection Agency) for bringing pressure to bear on commissioners ‘dragging their heels’ in cracking down on sanitation violators
11. Male gendered colloquial phrase meaning to belong to alumni or exclusive club.
12. Galveston County population figures for 1950: 100,000 total population, 78% White and 22% Black. Hispanic population was not reported. Source: Handbook of Texas Online (in references).
13. Source: www.council-manager.org/form.php
14. City of Galveston Official website.
15. City of Galveston—Comprehensive Plan draft 2001. There is no link to this plan on the current official website

16. Galveston continues to expand in seasonal population although its permanent population base continues a gradual decline. There has been no change to evacuation capacity.
17. Texas legislation does not provide for mandatory evacuation orders.
18. Unless otherwise stated, the material for this section is taken from Corpus Christi Caller Times electronic archives. Full citations in reference section.
19. Unless otherwise stated, the material for this section is taken from Corpus Christi Caller Times electronic archives. Full citations in reference section.
20. See Prater and Lindell (2000) for definition and application.
21. Interview with the Mayor of Corpus Christi, 02/04/99.
22. Interview with the Deputy Director, Port of Corpus Christi, 02/04/99
23. Unless otherwise indicated, this section comes from Handbook of Texas Online. Full citation in reference section.
24. Interview with the President and CEO, Greater Corpus Christi Business Alliance, 02/05/1999.
25. Interview with the Mayor of Corpus Christi, 02/04/99.
26. Ibid.

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