

DONALD R. NELSON  
AND TIMOTHY J. FINAN

# Praying for Drought: Persistent Vulnerability and the Politics of Patronage in Ceará, Northeast Brazil

**ABSTRACT** The phrase *persistent vulnerability* reflects the enduring relationship of the rural population in Ceará with a highly variable climate. Persistence underscores the historical and unyielding nature of this vulnerability. Yet contrary to once-catastrophic rates of mortality etched in a public consciousness, no one dies from severe droughts and few people flee them as in the past. Government relief and social transfers have become the institutionalized form of adaptation, giving way to the counterintuitive reality that drought stabilizes the food and income supply for poor people. We analyze how maladaptive risk reduction, which is embedded in clientilistic social relations, undermines resilience, and we examine pathways toward a more sustainable adaptive relationship. [Keywords: adaptation, clientilism, patronage, resilience, drought]

**ABSTRACT** Aplicamos o termo vulnerabilidade persistente para representar a relação duradoura entre a população rural do estado do Ceará e a quadra chuvosa altamente variável e incerto. Esta persistência se destaca na inevitabilidade histórica desta vulnerabilidade. Ao contrário das épocas de seca catastróficas bem cravadas na consciência pública do sertanejo cearense, o cenário da seca marcada de morte e fuga não existe mais. Os programas de emergência e de proteção social já se transformaram em formas institucionalizadas de adaptação, deixando transparecer a realidade irônica que a seca acarreta um período de estabilidade de alimentos e renda para a população mais necessitada. Aqui avançamos a tese que esta estratégia pública de adaptação à seca, sendo baseado num clientelismo enraizado, enfraquece a resiliência fundamental da sociedade face à mudança climática. Findamos por examinar os caminhos de adaptação mais promissores e sustentáveis.

**N**ORTHEAST BRAZIL has maintained widespread name recognition in the academic and practitioner literature pertaining to drought and climate-based hazards. The unfortunate mixture of sharp climate variability with a largely resource-poor, agricultural population has made this semiarid region the focus of numerous socioeconomic, cultural, and biophysical studies, all of which attest to a gripping vulnerability and to the continuing need for lasting solutions. Nonetheless, the unabated presence of this long-suffering region in the hazards literature suggests that past findings and policies have experienced limited long-term success in reducing the root causes of climate vulnerability. Despite unprecedented levels of investment, myriad policy programs, and innumerable technological fixes, this vul-

nerability to drought remains tenacious and intractable—in short, persistent.

With its tragic history of drought and famine, the northern Brazilian state of Ceará epitomizes the regional drama of the semiarid Northeast and its many challenges (see Figure 1). Since the great El Niño droughts of 1877–79, when an estimated 500,000 lives were lost, Ceará has occupied a symbolic status for suffering that has captured both the sympathetic imagination of the citizenry and the generous resources of the federal government. Giant dams have been built to store water; fleets of cloud-seeding airplanes have been mobilized and mothballed; massive relief programs have been implemented; and, most recently, a highly sophisticated climate-forecasting system has been



FIGURE 1. Location of Ceará, in Northeast Brazil.

put into operation. Yet, the basic underlying vulnerabilities of the rural population remain unchanged and unrelenting in their logic.

Generations of rural inhabitants have learned to cope by exchanging intangibles for tangibles with the privileged class. In the Northeast, such linguistic terms as *compadre*, *patrão*, *cabreste*, and *cria* encode the underlying reality of social inequality and the pervasive presence of vertical dyadic relationships as the primary mechanism of survival.<sup>1</sup> In this sense, vulnerability is not synonymous with the existence of poverty itself but with the socially instituted inequities that preclude any escape from poverty. The reach of patronage is enrooted in everyday social interaction and is endemic at all levels of the political process. As a result, even the policy programs designed to alleviate the consequences of drought actually contribute to the persistence of the underlying vulnerabilities by reasserting the patron-client relationship (Finan and Nelson 2009; Kenny 2002).

Consistent with the social and historical reality of Ceará, the government has come to wear the mantle of *patrão* (patron) and is expected to provide for the disadvantaged members of rural society during times of stress in exchange for political and other forms of support. In effect, the social history of climate vulnerability and crisis in Ceará suggests a form of social compact in which government assumes the moral responsibility to mitigate the impacts of

drought and in doing so legitimates both its own authority and the nature of the political process. Thus, we posit that the recurrent cycle of drought and emergency relief—initiated during the 19th century—has become an institutionalized form of adaptation to crisis recognizable and articulated within the larger model of patronage. When, however, local residents come to implore the arrival of drought because it triggers the government-relief mechanism, we pronounce this form of adaptation ironic in the sense that the process of relief itself reiterates the underlying causes that make people so dramatically vulnerable in the first place. We thus seek to examine in a specific ethnographic context the complex and dynamic linkages between drought-based human crisis, local response, and governance. We suggest that these relationships are articulated by an all-pervasive model of patronage and clientilism that limits choice and agency and, as a consequence, assures the persistent vulnerability of rural families.

This article is based on several years of research and development practice in Ceará made possible through a series of grants funded by NOAA's Human Dimensions Program. The first phase of this research, carried out during 1997–98, was designed to assess the role of climate-forecast information in decision making among farm families and state policy makers in Ceará. Given the importance of drought and climate variability, the research sought to assess the

impacts of a recently established climate-forecasting system on the livelihoods of farmers and on the policies intended to promote rural development. The research team carried out a household vulnerability survey among 484 farm families in six *municípios*, each representing different agroecological and climatic zones.<sup>2</sup> The survey data were complemented by systematic interviews with key government agencies, policy makers, farmworker unions, development banks, merchants, and others at both state and local levels. Based on the subsequent results, a subsample of 52 households was revisited during the two following years, which were characterized by a severe El Niño–related drought. The authors thus had a three-year record of household responses to an unfolding drought event.

The first phase of the research suggested that, because of the widespread vulnerability of households, the forecast information had little impact. These farm families did not have the necessary options available to tailor responses to a range of forecasts. Thus, the focus of the second phase of the research shifted to the public institutions responsible for drought mitigation: the *município prefeitura* (the lowest level of elected government). This research phase combined participatory research workshops in local *comunidades* (communities) in eight *municípios* with a Participatory Geographic Information System (PGIS) technology to produce vulnerability maps at the *município* level (Nelson et al. 2009).<sup>3</sup> In follow-up workshops, these maps became central instruments for *município* planning based on the objective and transparent assessment of community-based vulnerability.

This article reflects the accumulated knowledge and insights gained by the authors over an extended (and ongoing) period of ten years as they have sought to demonstrate the intricate and intimate relationship between vulnerability to environmental stress and governance in rural Cearense society.

### ADAPTATION AS THEORETICAL FRAMEWORK

Anthropology has a rich tradition in the study of adaptation processes that dates back to early cultural evolutionary thinking and the functionalism of Bronislaw Malinowski and others. While rejecting environmental reductionism, anthropological analysis based on detailed ethnographic description was able to link social structure, cultural practices, technology, and environmental context to an overarching logic of survival and cultural persistence. With Julian Steward's ethnography of the Paiute bands of the Great Basin, these relationships assumed a time dimension: that is, the specific social structural arrangements of Paiute hunters and gatherers were seen as long-term adjustments to the exigencies of place, climate, and natural resource base (Steward 1938).

With the emergence of cultural ecology, however, a more localized, systems-based thinking became prominent, and the concept of "adaptation" was used to explain both change and continuity of social and cultural systems

(Alland 1975). Initially, adaptation was employed to explain the success and "fitness" of human societies in a broad range of environmental habitats (Cohen 1974), in effect seeking to explain the historical logic of cultural complexes as a consequence of adjustment to changing niche conditions. In avoiding the stability trap of structural functionalism, adaptation thus provided the conceptual framework for understanding how sociocultural institutions participate in and influence the dynamic process of change. As systems theory became more widely accepted in anthropological analysis, however, the concept of "adaptation" shifted away from the broadly ex post facto explanations of sociocultural configurations as the end result of a localized and protracted adaptation process. Rather, the concept shifted toward a more ecosystem-based framework in which adaptation was employed to describe the dynamic negotiation of human and ecological systems as they adjust to one another under conditions of external and internal pressures (Bennett 1976; Rappaport 1971).

The implications of these theoretical nuances are important in several critical ways. When adaptation is situated at the point of dynamic interface between human and ecological systems, human agency assumes a pivotal position as the source of variability that sponsors change in the nature of the human–environment nexus (Brumfiel 1992; Netting 1993). A second theoretical implication is that the teleological imperative of functionalism is abandoned because the dynamic of adaptation does not have an ultimate destiny, especially in the context of exogenous pressure. It is not possible to predict what sociocultural manifestations will emerge as human and ecological systems adjust to stress—of environmental origin or otherwise. This being said, the final theoretical implication of this version of adaptation is that there is an intrinsic resistance to change in the system components and interrelationships. Thus, at the localized site of human–ecological system interaction, the tension between structure and agency plays out as a dialectical process of change and persistence without any intrinsic foreknowledge of what the outcome will be.

### ADAPTATION AND VULNERABILITY

In the expanding literature on climate vulnerability, adaptation is frequently presented as a process or set of processes designed to reduce vulnerability and to minimize the potential negative impacts of variable climate stimuli (Adger et al. 2007; Smit and Pilifosova 2001). The acknowledgment of the potential negative impacts from climate variability creates the theoretical need for the concept of "vulnerability," which itself has become a type of metric for adaptive success. Yet the concept of "vulnerability" itself has variable definitions and interpretations that essentially shape how we think about adaptation (Adger 2006; Eakin and Luers 2006; Liverman 2001). From a public-policy position, these differences are not merely pedantic, because they result in very different types of policy options and practical implications (Eakin et al. 2009). In fact, we would

assert that the differing definitions of *vulnerability* directly influence the livelihoods and well-being of real-time households and communities and thus bear critical social and moral implications.

A narrow definition of *vulnerability* focuses on a potential set of outcomes (e.g., suffering or starvation), while the broader interpretation frames vulnerability as a context-derived social state of being. The narrow perspective situates adaptation in a framework of rational risk assessment and the power structure that implements decisions (Nelson et al. 2007). Climate risk is assessed by the likelihood of a disaster and its concomitant outcomes (Brooks et al. 2005; Dilley and Boudreau 2001). This version of adaptation combines science and experience within the context of institutional structures to define and evaluate options in response to identified risks. In this approach, evaluations of adaptive actions are static in nature and, in effect, measure the levels of risk before and after an intervention.

The government in Ceará has traditionally adhered to the risk-management approach to climate adaptation. Because *vulnerability* is defined in terms of risk to negative outcomes, public actions are directed at mitigation of these impacts. In Ceará, drought historically engendered hunger, thirst, death, and forced migrations. As later sections discuss, government actions now provide food, water, and cash for the *flagelados* (victims of drought). As a consequence, drought-related mortality is no longer apparent and forced migrations have significantly declined, suggesting that the state has been successful in mitigating the worst of the impacts. Nonetheless, as a result of the high levels of vulnerability, farm families remain dependent on the state political apparatus (and the local elite) during times of crisis.

A broader understanding of vulnerability is based on the ability of individuals and communities to respond to external stresses and explicitly incorporates social relations of power. This version turns the analytical prism toward issues of livelihoods, entitlements, human agency and choice (Adger and Kelly 1999), and the social relations that determine their distribution in society (Oliver-Smith 2002). It also critically incorporates scale as an endogenous variable. How vulnerability is manifest at a local level of household or community is determined by the social and biophysical facts that comprise the local reality. This reality, however, is itself shaped by larger-scale phenomena; therefore, this definition of *vulnerability* incorporates the relationships of people to broader political economic forces as well as to their specific environment and to each other (Oliver-Smith 2004).

This comprehensive definition of vulnerability promotes an understanding of “adaptation” that links household-level characteristics with larger political and policy contexts. At the most local level, adaptation is a function of intrahousehold and intracommunity dynamics; at its broadest level, it reflects political, social, and economic trends that are determined by regional, national, and global forces (Ellis 2003). Adaptation thus articulates not only en-

vironmental factors such as limited rainfall but also the panoply of social inequalities, class power, and struggles over land and other natural resources (Blaikie 1985).

In sum, vulnerability is not something that resides in groups or individuals but, rather, is “embedded in complex social relations and processes” (Hilhorst and Bankoff 2004:2). In Ceará, patronage relationships determine access to productive resources and livelihood options in direct and subtle ways that severely constrain the sets of preconditions necessary for adaptation and the ability to exploit them—specifically, household adaptive capacity (Brooks et al. 2005; Eakin and Lemos 2006; Tompkins and Adger 2004).

### ADAPTATION AND RESILIENCE

The concept of “social-ecological resilience” resonates well with the comprehensive perspective of vulnerability. Although resilience and vulnerability are conceptually related, they are not mirror versions of each other (Gallopín 2006). Resilience is a characteristic of a system that allows it to absorb disturbances without losing its function and structure while protecting its capacity for change and adjustment (Carpenter et al. 2001; Walker et al. 2004). The capacity for change and adjustment is predicated on maintaining a diversity of responses, which, in the social and political realm, means encouraging and maintaining the participation of diverse actors to increase response options (Berkes 2007). As such, resilience is a defining component of the adaptation process in that it allows a system to adjust to stress while maintaining its essential character. In other words, resilience provides a long-term horizon to system dynamics that are in constant motion (Folke et al. 2002; Walker et al. 2002).

Although resilience is often focused on system stability, it also explains change. The adaptive cycle is a heuristic that explores the cyclical nature of change, including the notion that change is inevitable. For a variety of reasons, including increased rigidity, systems become more prone to collapse and fundamental change. The conceptual emergence of “panarchy” in ecology has provided an analytical tool for understanding the adaptive cycle and dynamic processes across scale and time (Gunderson and Holling 2002; Holling et al. 2002). This framework recognizes the importance of scale and the dynamic linkages between nested subsystems (incl. individual actors). Although larger-scale, slow-moving variables have the ability to set boundaries of change, the smaller-scale, fast-moving variables are recognized as the propulsive elements that promote and orchestrate change. Thus, although adaptive capacity is mobilized at a local level where negotiation occurs, options are defined, decisions are made, and actions taken, the cumulative implications and outcomes are assessed at a systems-wide scale over the longer run.

It is important to highlight that resilience is not a normative concept. A system can be resilient or not, but it is our human perspective that attributes value judgments to

the state. In fact, the patronage-based political institution in the rural Ceará society is quite resilient, although few would argue that it is a “good” or desirable system state. Brian Walker and colleagues (2006) have suggested that actions designed to reduce specific vulnerabilities may actually decrease system resilience to other unknown shocks. Applying this to our argument, the public actions related to drought mitigation in Northeast Brazil have reduced the vulnerability of rain-fed farmers to a set of negative drought-related impacts (e.g., mortality and migration) but have done so at the expense of the resilience of the social-ecological rain-fed farming system. The policies focused on drought impacts have retarded, even precluded, the development of local-level capacities to deal with other nonclimate types of shocks (economic, health, etc.). To relate back to the variation in vulnerability definitions, policies built on a risk-management approach imply that system perturbation will be addressed through a top-down response chain that mitigates impact, whereas resilience policies focus on building local capacity to absorb external perturbation.

Within this theoretical framework, we seek to understand a historical process of adjustment to drought in Ceará. This history has its precedents and prior conditions rooted in precolonial and colonial cultural values and unequal power relationships (institutionalized in both slavery and feudal arrangements). The character of the adaptive process that developed in response to the specter of regular environmental stress adopted these values and relationships as primary components of the social-ecological system—components that have adjusted to external stress and persisted. Against this historical backdrop, our contribution is to demonstrate how the adaptive strategies have worked to restrict human agency and to rigidify the system in ways that maintain the original conditions. The principal implication of this argument for both farmers and policy makers is that a form of adaptation built on the foundations of inequality and persistent vulnerability must ultimately address both its internal contradictions and increasing environmental stress conditions.

In Ceará, public policy has encountered its highest success in mitigation strategies that follow a risk-management, rather than a resilience, approach. The successes are short term, relating to individual drought events, and the response process reinforces the underlying vulnerabilities. Through time, the government relief program has developed into a long-term adaptation to climate variability: in some cases, beneficiaries actually prefer years officially termed *drought years* because it brings a sense of security to lives and livelihoods that are insecure almost every year. An elderly female participant in a focus group commented that “por aqui, rezamos pela seca” [around here, we pray for drought]. Although the state acts to keep people alive and down on the farm in the event of a drought, the “normal” level of well-being for the rural farm family remains one of poverty and suffering . . . and persistent vulnerability.

## THE SETTING

Ceará’s semiarid tropical hinterland, the storied *sertão* region with its unique and forbidding *caatinga* ecosystem, covers 94 percent of the land area. It is the drama of survival in this harsh, seemingly cruel environment that has defined the collective conscience and culture of Cearenses (residents of Ceará) since the 16th century. The state sits squarely within what is known as the *polígono das secas* (drought polygon), a region of nearly 1,000,000 square kilometers in nine Northeastern states, of which almost 90 percent is classified as semiarid (see Figure 2). The drought polygon is not the only region in the country to experience drought, but the frequency, severity, and socioeconomic impacts of its droughts inspire the almost mystical image of the area.<sup>4</sup>

According to the paleoclimatic record, drought has been a part of the regional climate for thousands of years, and historical records document the numerous droughts that have plagued the region since the arrival of Pedro Cabral in 1500 (Carvalho 1988). One of the characteristics of a semiarid region is the high temporal and spatial variability of the rainfall regimen. In Ceará, in any given year, some municípios may receive above-average rains while others suffer through localized droughts. Because of the high dependence on rain-fed agriculture, the dispersion and quantity of rains each year has a large impact on the socioeconomic well-being of the rural population. Drought, as defined by precipitation thresholds, is invoked as the scourge of agriculture.

Annual variation is expressed in Figure 3 by presenting extreme events as a percentage of the average precipitation for six municípios and the state. But for rural households, rainfall is meaningful not only in terms of total annual precipitation but also with regard to the timing of the rains. The *inverno* (lit., the winter but, in the Northeast, the rainy season) usually lasts four to five months with the bulk of precipitation occurring in March, a critical month for the crop cycles of the staples, beans and maize. Intra-annual rainfall, however, is even more variable than interannual differences. For example, in the município of Parambu, which sits in the heart of the *sertão*, the March rainfall accumulations during the last 30 years range from 15 to over 400 millimeters. Conventional wisdom in the past suggested that droughts occurred on average once every ten years, but the frequency and severity have begun to increase over the last four decades: during the 1990s, four years of drought were officially registered.

Drought is a very human experience in rural Ceará. For the hardened *sertanejo* (inhabitant of the *sertão*), most years are difficult, but the uncertainty of the *inverno* creates a collective angst among rural farmers as they look to the heavens for signs of rain. Inadequate rains bring suffering and hardship to families that already live on the margin of survival. Typically, farmers are land scarce and cash and asset poor and their livelihoods are heavily dependent on rainfall. When rains are insufficient, livelihoods



FIGURE 2. View of the Sertão during the dry season.

are compromised and many households can provide neither enough food for themselves nor enough feed for their limited livestock. More immediate is the lack of drinking water, because drought turns reservoirs briny and dries up alluvial wells (see Figure 4). Related but ancillary consequences include an increase in food prices, health worsened by decreased nutrition, and high psychological stress.

In the past, drought has incurred dramatic response. Until the mid-20th century, drought often took a significant toll on human life, both through starvation and

through weakened resistance to disease, especially among children and the elderly. The ravages of drought drove the population out of their homes, first to the município urban center or to the landowner, then to larger cities and to the state capital of Fortaleza. In fact, the majority of the mortality in the horrific 1877–78 drought occurred in containment camps outside the state capital. This historical suffering is etched in the cultural memory of the sertanejo, and the traits required for survival in this difficult environment are often portrayed as romanticized cultural ideals. Stoicism, personal loss, itinerant migration, and the dependence on a frequently indifferent patron continue to be recounted in song and verse, particularly in the informal pamphlet literature (*literatura de cordel*) so widespread in the rural areas. This is commonly interpreted as a sign of a fatalistic and submissive worldview. But although many sertanejos take pride in their cultural and physical environment, historically they have also demanded social and economic justice through popular social mobilization, millennium movements, and rebellion (Kenny 2002). Praying for drought reflects the immediacy of today’s needs. But most sertanejos still continue to pray for a more just and equitable society.

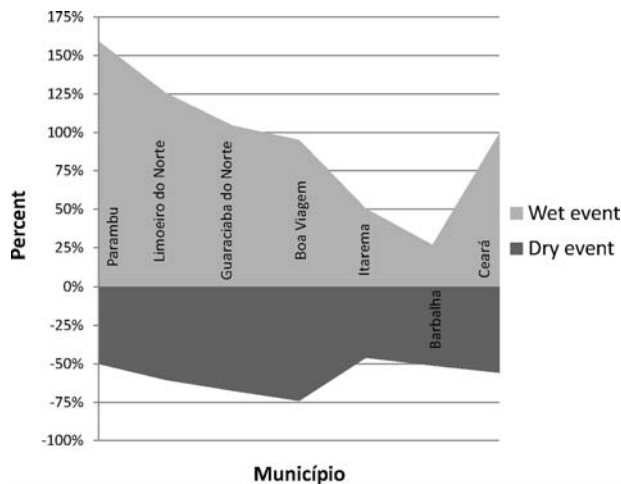


FIGURE 3. Interannual rainfall variation: extreme events as percentage of average (1976–2006).

**PATRONAGE, POLICY, AND POLITICS**

Clientilism in Ceará dates to the uneven settling of the region by the Portuguese. During the early formation of the Northeast, the Crown sought to populate the colony and extract its productive value through the distribution



FIGURE 4. A *barreira* (water-runoff catchment system used for domestic and livestock needs).

of vast tracts of land (*sesmarias*) to nobles, military officers, investors, and others loyal to Lisbon. Through time, these tracts were divided into large landholdings called *fazendas*, where ranching and agriculture were practiced. The landed elites commonly purchased the title of *coronel* (colonel) and ran their landholdings as fiefdoms. This process established the patron–client relationships that today privilege the economically and politically powerful, whose demand for loyalty results in servility, exploitation, and dependency. Although a person may trade one patron for another, the system is never abandoned.

In the highly precarious and uncertain environment of traditional rural society, patron–client relationships were an essential aspect of survival and provided the platform for unequal exchange (Redfield 1973; Stein 1984; Wolf 1966). The clients depended on their patrons for protection during drought episodes, and the patrons in turn counted on labor and political support. The value of these relationships is evident in their absence. A farmer who benefited from the land-reform movement and who resides on one of the new settlements (*assentamentos*) reflected that he felt much more protected from drought events when living on the land of the patron than he did at the time of the conversation when he was dependent on the bureaucratic mechanisms of drought response. We agree with Howard Stein (1984), however, that although the patron–client relationship may provide mutual short-term benefits, it undermines long-term system adaptive capacity.

It is telling that Brazilians do not have different terms for the words *policy* and *politics*. That a single gloss, *política*, is pressed into double semiotic duty reflects a fundamental

cultural value that all policy making is conceptually inseparable from political positioning—and from patronage. *Política-as-politics* connotes an array of power alignments and less the divergent political philosophies found in, for example, the U.S. political arena. It communicates a more encompassing sense of the *governo* (the government), or the state. It is the institutionally sanctioned “those in power” pitted against the general populace “without power” that creates the political tension in this society. Centuries of social inequity with regard to resource access and, beginning in 1964, a generation of military suppression of democratic expression made the *governo* a political rather than policymaking entity whose ultimate objective, in the eyes of the masses, is self-preservation. Thus, a disempowered constituency, informed by patron–client forms of social interaction, looks to the state for assistance because of a cultural notion of governmental (patronlike) responsibility toward the (clientlike) masses and not because of the rights-as-citizen that demand public accountability to the people. Under the 1988 Constitution, citizens have essential rights (e.g., to health and education), and such democratic principles are slowly beginning to regulate social, economic, and cultural arenas. Teresa Caldeira and James Holston argue that, in Brazil, the civil component of citizenship is actively undermined by patronage leading to what they label a “disjunctive” democracy (1999:692).

Contrary to the ideal of a democracy in which civil society creates the state, in Brazil the opposite has happened (Ferraz Júnior 2003). The historical failure of the populace to see itself as part of the *governo*, and thus constitutive of the policymaking process, has created a dynamic in public

decision making in which the distrusting and suspicious, yet highly dependent, masses await the next public initiative, which the state promotes as true legitimization of its existence. Nowhere is this dynamic more in evidence than during drought crises.

To this day, município governments do not plan for the occurrence of drought. Response policy is forged in real time, and resources are appropriated only after emergencies are declared. For emergency assistance to flow to a município, the *prefeito* (roughly, “mayor”) must petition the governor, who then declares a state of emergency and authorizes the release of funds. The state civil-defense agency in the capital also maintains a list of indicators that measure the severity of drought at the município level—amount of rainfall, estimated production, percentage of urban population, level of social unrest, and others—and this list is used to “confirm” the local-level request. In the period before public assistance is mobilized, it is not uncommon for communities to invade the local commerce in search of food and to block federal highways stopping commercial food trucks and absconding with their contents. In our research, we found communities with reputations for their expertise in these activities, sometimes warning shopkeepers prior to an “invasion” to enhance the performance aspect. In effect, we interpret these actions as a demand for the government to fulfill its patronage role, as expected in the normal social order.

Although the civil-defense criteria are objective measures, the speed and timing of the release of funds are tied to political affiliations, and “opposition” communities can often suffer from economic neglect (Scheper-Hughes 1992). Civil servants in two of the sample municípios reported that emergency funds had been slow to arrive in the past because of the fact that the município governments were members of the state political-opposition party. Thus, we conclude that the patronage system dominates not only public and citizen relationships but also the relationships between levels of government itself (Lemenhe 1995).

In 1986, running on a platform of change, now-federal senator Tasso Jereissati was elected governor of Ceará. The popular ratification of his *Governo das Mudanças* (Administration of Change) marked the end of *coronelismo* and introduced changes in the relationship between citizens and the government. As governor, Jereissati sought to make differences in three general categories: fiscal austerity, modern administration, and improving public service, which included reducing the clientilistic aspects of the public administration (Lima 2004). In the first two categories, the administration made significant headway. During his two terms as governor (1986–89 and 1995–2002), the government was largely credited with many of the recent advancements in economic and development indicators and the continuing growth of the state. However, his administration is not credited with such success in the third category. Although the institutional apparatus changed, the overall power structure, political access, and the power of

the voice of the people changed little. Cláudio Ferreira Lima (2004), quoting Carlos Nelson Coutinho (1992), calls this a *transição fraca*, a weak transition—one in which political space was opened up but, at the same time, authoritarian and exclusionary elements of the dictatorship were maintained. The participatory and democratic aspects of the administration became illusory, and the reforms did little to hamper elite interests or to minimize inequity (Kenny 2002; Kuster 2003; Lima 2004).

Nevertheless, particularly in comparison with other Northeast states, Ceará is viewed in a progressive light, and concrete steps have been made that reduce the power of the patronage system. Several public-policy models have had positive repercussions throughout the country. These include, among others, the decentralized health-visitor scheme, the creation of participatory water-basin management committees, and the poverty-reduction program, São José, which is based in community participation (Lemos and de Oliveira 2004; Tandler 1997). More recently, the state has done away with emergency cash-for-work programs in favor of a public-insurance scheme (*Segura Safra*). The national safety-net program Bolsa Família provides guaranteed income even in drought years. Although these programs have reduced the reach of patronage, they remain ameliorative and have done little to address the underlying vulnerabilities.

## PERSISTENT VULNERABILITY

Our research has sought to determine the distribution and the magnitude of vulnerability to climate variation throughout the state of Ceará and, consequently, the ways in which farming households and communities respond to drought at the intersection of local agency and public policy. Currently 2.5 million people are dependent the agricultural sector, which contributes a mere five percent of the state GDP (Araújo and Falcão 2004). Consistent with what is known about low-income families everywhere, most households in rural Ceará have more than one source of income, piecing together a livelihood based on agriculture, formal and informal employment, outmigration, and social-pension entitlements. These sources contribute differentially to the vulnerability of the household, depending on their level of climate sensitivity. For example, on average, agricultural production represents over 50 percent of all household income (Nelson 2005); however, because only 15 percent of all agricultural land in the state is irrigated, agriculture is highly sensitive to climate. Diversified cropping systems also involve some small-scale livestock production. Once a symbol of wealth and power, cattle have lost ground to small ruminant livestock (sheep and goats), which are better suited to the semiarid environment. Employment opportunities are severely constrained in rural Ceará, and they tend to be temporary, low paying, and agriculturally based—thus, highly sensitive to climate. Outmigration is pervasive and has evolved into a regular



**TABLE 1.** Household Vulnerability Category Membership by Município.

Município	Vulnerability category					
	Most N HH	%	Medium N HH	%	Least N HH	%
Limoeiro do Norte	32	40	33	41	16	20
Barbalha	37	45	30	37	15	18
Parambu	67	84	9	11	4	5
Boa Viagem	63	79	13	16	4	5
Itarema	61	76	16	20	3	4
Guaraciaba do Norte	45	56	29	36	7	9
Total	305	63	130	27	49	10

livelihood strategy as well as a coping strategy for dealing with drought. Many households receive remittances in cash and in kind (parabolic antennas and color TVs being the favorites) from relatives located in the south of the country or in Fortaleza. Remittances increase significantly during a crisis.

Based on data from our survey of rural households, we described and classified levels of vulnerability (see Table 1). The categories were created using a combination of extreme poverty (indigence) and poverty thresholds, the climate sensitivity of the household income, and irrigation.<sup>5</sup> This economic metric measures the impact of drought on household production and permits an analysis of relative vulnerability across households. It should only be considered as a proxy to identify vulnerable populations based on outcomes. Other than the presence or absence of irrigation, the metric does not consider agricultural production, because,

for the most part, all rain-fed systems are similarly vulnerable. The most vulnerable category includes those households who would lie beneath the extreme poverty line if they lost all of their climate-sensitive income and who do not irrigate.<sup>6</sup> The middle category includes those households that would fall beneath the poverty line with loss of climate-sensitive income but have access to irrigation. The least vulnerable are those that have sufficient income to remain above the poverty line even if climate-sensitive income was reduced to zero.<sup>7</sup>

One of the most significant contributions to drought adaptation comes in the form of retirement benefits, which are part of a larger social-welfare program designed as a poverty-alleviation tool. Farmers and farm workers are eligible for retirement at 55 years of age for women and 60 years of age for men. Beneficiaries receive a payment that is equal to the minimum salary. In our original 1997 sample of 484 households, 419 individuals in 176 households were receiving benefits. Just over 33 percent of the sample population lived in households with pension income. During drought episodes, the reach and importance of this stable source of income take on new significance as other more sensitive income sources disappear and many retirees help support family members in other households or neighbors that are in need.

There are three primary mechanisms through which the government has traditionally responded to drought emergencies: food baskets, water delivery (see Figure 5), and cash-for-work programs (*frente de frabalho*; see Figure 6). Patronage relationships influence access of municípios to these resources and, within the município, individual

**FIGURE 5.** A water truck and driver on the delivery route in Limoeiro do Norte.



FIGURE 6. Chapel construction as part of the cash-for-work program.

household access. Families that do not support the prefeito at election time have more difficulties in accessing these resources. Individuals in two of the municípios also reported losing their civil-servant positions in nondrought years as a result of a new prefeito taking over and creating space for his or her political supporters. The public-works programs provide small amounts of cash to the most vulnerable in exchange for part-time day labor on such projects as well digging, road clearing, building small reservoirs, and other types of construction activities. Public-work wage levels are around half a minimum salary. During 1998, nearly 40 percent of the households had at least one person working in a cash-for-work program, and the income represented, on average, 73 percent of total household income for that year (see Table 2).

In addition to cash transfers, the government also distributed food baskets during the crisis of 1998–99. These food baskets contain the basic elements of a normal diet (beans, corn meal, rice, oil, sugar, powdered milk, pasta,

cassava flour, etc.) in quantities designed to meet household needs for one month. In our sample of 1998 households, two-thirds received food baskets (incl. 95 percent of the most vulnerable households). The third component of emergency response is the provisioning of drinking water. The município uses federal funds to contract companies that haul water to the needy communities free of charge. The federal government and NGOs have been responsible for the construction of cisterns in the region, which are owned by individuals as well as communities. However, if a private cistern is supplied free of charge with water from the emergency trucks, the entire community is required to have access. The delivery of drinking water has tremendous value to local households who otherwise would have to relocate.

Emergency relief efforts have brought significant benefits, regardless of the mechanisms of transfer. Table 2 reports the number of beneficiaries of food baskets and participants in the cash-for-work program. Overall, participation correlates well with the vulnerability categories, and a total of 45 of the 52 households across the categories received some type of government emergency assistance. The monetary value of the cash-for-work income is very significant, especially for the most vulnerable. Although they did not receive emergency relief, the least vulnerable households were not isolated from the impacts of the drought: several reported having to reduce consumption—or, in the idiom of the sertão, “botar mais água no feijão” [add more water to the beans].

The vulnerability analysis stresses the importance and continued dependence on government resources to overcome the impacts of drought and climate variation. Although the government has made significant progress

**TABLE 2.** Number of Households Benefitting from Emergency Relief and the Contribution to Total Off-Farm Income.

Vulnerability category	Received food basket		Employed in cash-for-work		Contribution of cash-for-work income to total off-farm income
	N	HH %	N	HH %	%
Most	31	89	19	54	74
Medium	9	82	1	10	56
Least	1	17	0	0	0
Total	31	84	20	38	73



FIGURE 7. Carving out space for a new cistern for rainwater capture and storage.

in reducing these impacts since the devastating 1877–79 drought, the symptoms of vulnerability (hunger and thirst) should not be confused with the causes of vulnerability. The historical inequity in resource distribution, the lack of quality education and health care, insufficient water systems, inadequate investment in physical infrastructure (energy, roads, etc.), and the absence of climate-neutral employment (i.e., manufacturing) describe the underlying and persistent pathology of vulnerability in rural Ceará. Historically, resources for municípios were not distributed in response to objective measures of need but, rather, were based on the personal relationships between *prefeitos* and higher levels of government. Thus, resources were often used to reinforce a *prefeito's* position and not to address perceived development needs.

The analysis does not suggest that farmers do not have agency or that they cannot act independently of the government. It does imply, however, that the options available to individuals reflect larger-scale constraints that condition the adaptive capacity of individuals (see Figure 7). Likewise in Kenya, for example, the ability of farmers to cope with drought events has diminished in the face of macrolevel transformations that include conflict, land tenure, market conditions, and environmental change (Smucker and Wisner 2008).

#### THE PATH OF ADAPTATION (NARROW OR BROAD)

Rain-fed agriculture in this semiarid environment is a highly uncertain and unpredictable activity under any

circumstances. Many of these rural households live on the edge of economic viability, even survivability, dependent on government assistance through social-transfer programs. As long as the vulnerability of rain-fed farmers remains precariously high, one can expect that government patronage will play even a greater role in the future. Anecdotal evidence suggests that the rains have been changing over the last decades, becoming scarcer and more variable, and recent climate projections do not offer encouraging prospects for rain-fed agriculture. The intra-annual dispersal of rainfall is projected to be more varied (Marengo 2007), and higher temperatures will increase already extreme levels of evapotranspiration (Marengo and Nobre 2005). From a purely meteorological perspective, the number of droughts is expected to increase and, everything remaining equal, so will the need of government intervention. Although the size of the crisis determines the cost of emergency relief, such assistance has tended to be expensive to the public coffers. In 1983, for example, over \$350 million was spent in the Northeast, and more than three million persons were employed. In response to the 1987 drought, nearly \$200 million were spent and one million people employed (SEPLAN 1991). In the severe 1998 El Niño drought, the value of humanitarian relief climbed to \$450 million in Ceará alone.

Vast resources have been spent over the last 130 years in combating drought (*combate à seca*). However, many of these resources have been directed at the symptoms of vulnerability (hunger, thirst, morbidity, and mortality), rather than toward resolving the underlying causes of

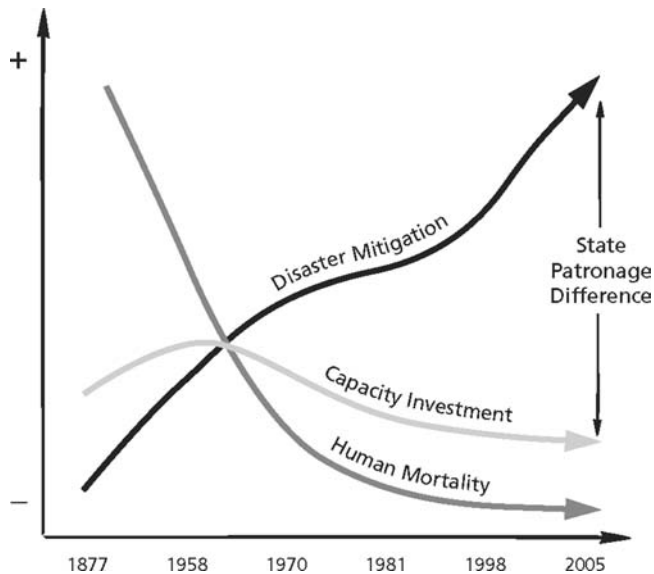


FIGURE 8. Heuristic of public-investment trajectories and changes in levels of drought-induced mortality.

vulnerability in the region. As a result, each drought episode requires increasing resources to avert a large-scale humanitarian crisis. Figure 8 is a heuristic that explores what we call the social-patronage difference. This is the hypothetical difference in the value of public investments in disaster management (business as usual) compared with investment in human capacity. Refocusing on causes and promoting the adaptive capacity of households and communities would lead to three specific gains. First, as presented in Figure 8, the elimination of drought-related mortality would still be realized but with a much-reduced impact on government coffers. Second, the role of the government during drought would shift to support and backup, rather than first responder. Finally, building adaptive capacity would help develop household resilience to other types of shocks and disturbances, such as economic fluctuations, employment loss, poor health, and pest infestations.

As a logical implication of this analysis, the dynamic of adaptation will entail the realignment of roles between government and its citizens—away from patronage and toward partnership. Similar processes are occurring in developed and developing countries around the world. On the more pragmatic side are calls for decentralization and devolution of power, processes that are evaluated through normative frameworks (Batterbury and Fernando 2006; Leach 2004). At a more fundamental level, this realignment reflects wider emphasis on the subjects of government as active in their own government (Rose 2000). This is coherent with the changing awareness of the role of non-state actors and social networks and relationships and has led to the growing importance of the community as a way to define democracy and improve state–citizen relationships. A “decentered” democracy does away with assumptions of a single collective will and places impor-

tance on the community as the site for political activity (Young 2000).

In practical terms, traditional livelihoods—based on social relationships of inequality and exploitation—are not sustainable, nor is the largesse of the public coffers that keeps disaster at bay during drought. Our interviews with public officials suggest that, as the urban population increases, with corresponding financial and social demands, it is becoming more difficult to maintain traditional emergency responses. To increase the capacity-building investment suggested above in Figure 8, it is necessary to advance strategies that not only treat outcomes but also seek to reduce the underlying vulnerabilities that cause them. Such a capacity-building policy would direct public resources toward human-capital enhancement (which has never been achieved), toward infrastructural investment, and toward the diversification of employment.

One way to begin would be the introduction of an official community-level planning infrastructure that would privilege the voice of the most vulnerable at the município level. In addition to the instrumental benefits, this process would be a first step in building a (mutually desirable) resilient society. A diversity of voices in the policy arena is a key tenet for resilient systems as well as sustainability science (Kates et al. 2001). Nascent efforts are taking hold in Ceará that seek to implement these types of change. In 2005, a pilot project, Projeto MAPLAN, was launched in partnership with the state government in eight municípios. The methodology uses a PGIS as a tool to bring communities and policy makers together to discuss current issues and possible futures (Nelson et al. 2009). Community members are trained in aspects of planning and proposal writing, and the state government is funding projects that result from this process. In addition to specific projects for bringing water or roads to communities, the methodology makes inroads against the patronage system by bypassing traditional routes of resource allocation (Finan and Nelson 2009).

Eakin (2006) suggests that adaptive policies—those that evolve over time as vulnerabilities change—should be the goal for farming communities in Mexico. Echoing this belief, the work in Ceará provides mechanisms to carry this forward by promoting diversity in the planning process and expanding the adaptive capacity of community residents. In light of the patronage institution, these changes face challenges. But as we discussed earlier, there are public servants throughout the state dedicated to changing business as usual.

## CONCLUSION

So why does a woman in a remote community of the sertão raise her eyes and arms upward to plead for drought? In part, her pleas reflect a sense of restricted human agency—or, as we have called it here, “limited adaptive capacity.” At the same time, from her position of severe vulnerability, the woman is acknowledging the responsibility of the government-as-patrão to provide for its constituents and, as

such, she legitimizes the government's right to power. This process of legitimizing power is similar to Lesotho, where "government services" became, in fact, services to govern and where, rather than eliminating poverty, the government used poverty as its entry point to expand and reinforce their power (Ferguson 1990).

Current thinking in adaptation highlights the dynamic tension and negotiation of human and ecological systems. When *vulnerability* is defined in terms of lack of access to productive assets and binding restraints on human agency, adaptive institutions and interventions assume a moral imperative. We have argued here that government patronage has become the principal institution of adaptation to environmental stress for vulnerable rural households. This institution has enabled vulnerability by creating avenues of access only through powerlessness and in which dyadic dependence precludes the privilege of citizenship. Whether such patronage is somehow conscious and intended to maintain political dominance or whether it reflects engrained cultural values regarding the organization of rural society does not distract from the conclusion that such adaptation is not sustainable. But as long as patronage is the organizing principle, persistent vulnerability will be the order of the day, and rural citizens will continue to pray for drought and the government will have to respond.

Some form of the patronage system has existed in Ceará for hundreds of years. Yet, if responses continue to isolate and emphasize the impacts of drought, the overall resilience of the system will continue to erode. A resilience framework, in fact, suggests that at a certain threshold the breakdown and transformation of the system is inevitable. Within the patronage system, there are contradictory dynamics that shift internal characteristics and influence thresholds. As the system comes closer to transformative thresholds, focus must shift from what has promoted persistent vulnerability to ways to direct transformation in a socially desirable way. Maria Carmen Lemos and colleagues (2007) suggest that successful adaptation to climate variability requires a negotiated balance between meeting the immediate needs in the face of climate events and the long-term development strategies designed to reduce future needs. Attempts at modifying the traditional approach to adaptation and vulnerability are underway in Ceará and have shown signs of initial success. In our view, sustainable adaptation will occur when the decision-making process becomes truly participatory, when governments make investments in local infrastructure and human capital, and when the patron-client relationship becomes a figment of social memory.

**DONALD R. NELSON** Department of Anthropology, University of Georgia and Tyndall Centre for Climate Change Research, University of East Anglia, Norwich, NR4 7TJ, U.K.

**TIMOTHY J. FINAN** Bureau of Applied Research in Anthropology, University of Arizona, Tucson, AZ 85701

## NOTES

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1. *Compadre* has no easy English equivalent: it is the relationship between adults, one of whom is the godfather of the other's child. *Patrão* is roughly translated as "boss"; *cabreste*, literally translating to a horse halter, refers to a someone always submitting to the patrão, particularly in terms of voting (*voto de cabreste*); and *cria* refers to a nonrelative who was raised in a household and has a highly submissive and dependent relationship to the family.

2. A *município* in Brazil is the lowest political-administrative unit of government and is similar in composition and size to a U.S. county. We maintain the use of the word *município* throughout the text because it does not have a convenient translation in English.

3. A *comunidade* (translated as "community") is a nucleated settlement of households within a município. The size of a community varies from less than ten to more than 100, and the number of communities in a given município varies from around 30 to as many as 400. These communities have place names and are used as points of identification of origin.

4. The cultural imaginary of the sertão has been fueled by such famous sociological treatises as Euclides da Cunha's *Os Sertões* (1985) and the classic novel of Graciliano Rocha's *Vidas Secas* (1973) as well as by numerous films and the unique pamphlet literature (*literatura de cordel*) ubiquitous throughout rural society.

5. These calculations were based on extreme poverty (R\$45 per capita/month) and poverty (R\$90 per capita/month) lines as determined by the World Bank (2000).

6. Three income categories were used. Climate-sensitive income refers to agricultural labor. Although drought affects all aspects of the rural economy, agricultural labor is the first and most directly impacted, as availability "dries up" during drought. Climate-neutral income includes salaried workers outside of the agricultural sector, small-business owners, and trades people. The third category is social transfers. For nondrought years, this reflects only retirement pensions. During drought years, transfers also include the cash-for-work program. For details on the development of the vulnerability categories, please see Nelson and Finan 2009.

7. The difference in vulnerability category membership between municípios is significant (Kruskal-Wallis  $p < .05$ ) and is explained in large part by the number of irrigators in the municípios of Limoeiro do Norte, Barbalha, and Guaraciaba do Norte.

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