

The Use of Knowledge in Natural Disaster Relief Management

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1 Introduction

More than 60 years ago, in his seminal article, “The Use of Knowledge in Society” (1945), Nobel Laureate Friedrich Hayek identified *the* problem of social coordination:

The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. The economic problem of society is thus not merely a problem of how to allocate ‘given’ resources—if ‘given’ is taken to mean given to a single mind which deliberately solves the problem set by these ‘data.’ It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only those individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge not given to anyone in its totality (1945: 519-520).

Hayek’s critical insight, latter called “the knowledge problem,” highlighted two central features of social organization (see, for instance, Lavoie 1985a). First, every society confronts a “division of knowledge” analogous in many respects to the “division of labor.” Information is fragmented, diverse, and often contained in inarticulate forms, held separately and locally by the many individuals who compose society. Second, the foremost obstacle that every effort at social coordination must overcome is somehow tapping into this dispersed information and processing it in forms that individuals can use to mutually achieve their ends.

This article investigates the issue of natural disaster management using Hayek’s key insight about the fundamental “knowledge problem” that all efforts to coordinate social activity must solve. We argue that natural disaster management is no different in this regard than coordinating individuals in “normal” economic contexts. Following a natural disaster there are “relief demanders”—individuals who desperately need disaster-

relief supplies, including evacuation, food, shelter, medical attention, etc. On the other side, there are “relief suppliers”—individuals ready and willing to bring their supplies and expertise to bear on the needs of relief demanders. On both sides of this “market” information is decentralized, local, and often inarticulate. Relief demanders know when relief is needed, what they need, and in what quantities, but not necessarily who has the relief supplies they require or how to obtain them. Similarly, relief suppliers know what relief supplies they have and how they can help, but may be largely unaware of whether relief is required and, if it is, what is needed, by whom, in what locations and quantities.

We argue that effective natural disaster relief management, just like successful social coordination in “normal” circumstances, must solve Hayek’s knowledge problem. Specifically, effective disaster management requires efficient information generation at each of three critical nodes, which represent distinct stages in the management and provision of natural disaster relief. The first is the recognition stage: has disaster occurred, how severe is it, and is relief needed? The second is the needs assessment and allocation stage: what relief supplies are needed, who has them readily available, and what areas and individuals need them the most? The third stage is the feedback and evaluation stage: are our disaster relief activities working, and what if anything needs modification?

Hayek suggested a solution to the knowledge problem in the context of economic decision-making generally. Given information’s decentralized nature and importance for achieving social coordination, he concluded the importance of allowing decentralized private sector actors, such as those participating in markets, to direct the bulk of

economic decision making. Unlike markets, central planning, Hayek argued, has no way of tapping into this information in a productive way:

If we can agree that the economic problem of society is mainly one of rapid adaptation to changes in the particular circumstances of time and place, it would seem to follow that the ultimate decisions must be left to the people who are familiar with these circumstances, who know directly of the relevant changes and of the resources immediately available to meet them. We cannot expect that this problem will be solved by first communicating all this knowledge to a central board which, after integrating all knowledge, issues its orders. We must solve it by some form of decentralization (1945: 524).

Using Hayek's insight, we explore the comparative ability of government and the private sector to generate the appropriate knowledge at each of the three critical disaster management information nodes pointed to above.¹ Consistent with Hayek's argument, we find that decentralized, private decision making effectively generates the appropriate knowledge at each information node.² Centralized, political decision making, in contrast, by its very nature, cannot.

Our analysis points to information as the fundamental failure of government natural disaster relief management. Government's informational deficit in the disaster relief context is an unavoidable outcome of disaster relief management's centralization when it is provided by the state. This suggests that disaster relief reforms that leave government as the primary manager of natural disasters are bound to fail. Correcting government's information failure in the context of disaster relief requires eliminating its root cause: government itself. Although our discussion focuses specifically on the case of Hurricane Katrina, the issues of information that we analyze, and Hayek highlighted as

¹ The arguments in this paper build upon and extend discussions in Sobel and Leeson (2006a, 2006b).

² Following Hayek (1948), we focus on private markets as this form of decentralization.

crucial to coordinating suppliers and demanders, provide important general lessons about disaster relief management.

2 Information Node One: What Disaster?

Information fundamentally depends on the institutional context in which it is created. All institutional contexts create some kind of information. But very few generate the kind needed to coordinate spatially and temporally separated suppliers and demanders.³ In the context of disaster relief, the first piece of critical information that arises involves determining when in fact a disaster has occurred and thus relief assistance is needed.

Information about the occurrence of a disaster and the need for disaster relief might seem straightforward. But when disaster relief management is politically centralized, it can be anything but. Perhaps surprisingly, the vast majority of disasters declared over the last decade have been for weather events that most people would not consider disasters at all, such as severe thunderstorms, wind, and snow (Garrett and Sobel 2003).⁴ On the other hand, some seemingly major disasters have gone undeclared. The disaster declaration process is clearly more complex and subjective than it first appears.

When disaster relief is centralized and managed by government, it necessarily becomes bureaucratized. Government agencies like FEMA are created to oversee and administer relief. These agencies are in turn overseen by other government agencies, each with their own internal bureaucracies, and so on. Following organizational changes after 9/11, for example, FEMA was placed under the umbrella of the Department of

³ For more on the issue of contextualized knowledge, see important work by Lavoie (1985a), Lavoie (1985b), and Boettke (2001).

⁴ Lavoie (1985a) shows that the knowledge problem Hayek identifies produces in practice the power problem that Hayek also identified. Boettke (1995) gives a public choice interpretation of this issue; see also Wagner (1989).

Homeland Security, adding new political decision makers to the mix. The layers of bureaucracy ultimately end at some key administrative figure, which in the case of disaster relief is the President, who must declare a disaster before FEMA can act. At each level of the bureaucratic process is a key political decision maker who must sign off before the proposed action can be considered at the next layer of bureaucracy.

Bureaucracy is a necessary and unavoidable outgrowth of state-run activities. It is necessary because unlike private firms, the activities of which are directed by profit seeking, government agencies have no analogous guide to direct their decision making (Mises 1944). Private firms seek profits as their objective and consequently have but one rule for their managers: maximize profits. Managers who contribute to the firm's goal and make profits can be rewarded and retained, while those who do not can be punished or let go. Owners' ability to measure managers' contribution to this goal is created by monetary profits and losses themselves.

But for government agencies things are different. They cannot make do with one rule for their "political managers." Since government agencies do not aim at making profits and, as we discuss below, they do not sell anything, they are unable to use profits or losses to direct managers' activities and to ensure that managers are contributing to the agency's goal. Absent this, some other guide for manager decisions and mechanism for checking the behavior of political agents must be employed. As Tullock puts it, in the absence of the profit and loss system to measure and ensure that political managers undertake activities that contribute to their agency's goal, "The central problem . . . is organizing subordinate politicians so that they, to the greatest degree possible, will behave as their superiors want them to behave (2005: 132). This political mechanism for

achieving this is bureaucracy. Detailed procedures and protocols must be used in lieu of the profit objective to guide and check political managers' behavior. In this sense, the principal-agent problem confronted within government agencies takes on a different character that requires different solutions than within markets because of the lack of a profit and loss mechanism (see Boettke 1993).

Although bureaucracy is inherent and essential to government agencies for this purpose, it does not follow that all of its effects are positive. Detailed protocols that involve multiple layers of approval before action may be undertaken prevent political agents from engaging in activities at odds with the ends of the agency, but also substantially slow government activities and information revelation. In the case of natural disaster declaration, for example, from government's perspective, information that a disaster requiring relief attention has occurred does not emerge until the protocol for disaster declaration described above has been carried to its conclusion.

From the view of political actors charged with relieving disaster, there is no disaster to respond to until the President, who is reached in the final stage of the bureaucratic procedure, has officially declared as much. This is true even if a disaster requiring assistance has already struck, the disaster is readily acknowledged and visible in the media, etc. Unavoidable bureaucracy inherent to government management creates a separation between what might be called "private knowledge" of disaster and "political knowledge" of the same disaster.

This bureaucracy-created "knowledge wedge" severely limits the goals that can be successfully achieved using government. According to Tullock, "These limits, it should be emphasized, are *limits on what can be done*, not on the size of the

bureaucracies that can be built. Furthermore, these limits are much lower if the task to be accomplished requires a high degree of coordination than if it does not” (2005: 170). The more monumental the task in terms of coordination, the greater the problem the knowledge wedge that bureaucracy generates becomes, and thus the less likely government is to effectively complete the task. Since, as Hayek (1945) points out, the coordination problem to be solved increases as the division of knowledge increases, this means that for endeavors in which information is more fragmented and localized, such as natural disaster relief management, as we discuss below, government is an increasingly less effective tool to accomplish the goal.

The bureaucracy-created “knowledge wedge” discussed above explains why, though the citizens of New Orleans, the media, and countless others were aware of the impending and eventual disaster caused by Hurricane Katrina, key government relief management figures, it appears, were not—or at least did not officially acknowledge that this was the case. The secretary of the Department of Homeland Security, Michael Chertoff, for example, did not declare Hurricane Katrina an “incident of national significance” until 36 hours after it made landfall.⁵ This occurred despite the fact on August 27—two days before Katrina’s arrival—the National Hurricane Center predicted Katrina would hit the Gulf Coast.⁶

Government was also painfully unaware of major and fundamental developments in the relief process following Katrina’s arrival. FEMA director Michael Brown, for

⁵ See “Military Due to Move Into New Orleans,” *CNN.com*, September 2, 2005, and C. Cooper & R. Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security* (New York: Times Books, 2006), pp. 131-133. For a complete timeline of Katrina-related events see http://uspolitics.about.com/library/bl_katrina_timeline_3.htm.

⁶ Jonathan Landay, Alison Young and Shannon McCaffrey, “Chertoff Delayed Federal Response, Memo Shows,” *Knight Ridder Newspapers*, September 13, 2005. See also “Service Assessment: Hurricane Katrina August 23-31, 2005,” NOAA. <http://www.weather.gov/os/assessments/pdfs/Katrina.pdf>

instance, only became aware that hurricane victims in New Orleans had been moved to one of the city's convention centers after being informed of this fact by a television journalist. On *Nightline*, Brown admitted, "We just learned of the Convention Center—we being the federal government—today."⁷

The negative repercussions of government's informational deficit in this regard are quite obvious. Until the relevant political actors are officially informed of a disaster, they cannot act. Relief is therefore stalled, and while government is taking the steps to officially recognize what everyone else already knows, disaster victims suffer.

As a useful point of comparison, contrast the government's ability to learn about disaster with the private sector's information about the impending situation in New Orleans and elsewhere. "The private-sector planning began before Katrina hit. Home Depot's 'war room' had transferred high-demand items—generators, flashlights, batteries and lumber—to distribution areas surrounding the strike area. Phone companies readied mobile cell towers and sent in generators and fuel. Insurers flew in special teams and set up hotlines to process claims. This planning allowed the firms to resume serving customers in record time . . . [T]he Business Roundtable had by August of this year arranged for each of its 160 member companies to designate a disaster relief point man. These folks were in place and ready to help before Katrina made landfall."⁸

Why were private disaster relief suppliers like Home Depot so much quicker to identify and begin attempting to remedy the disaster of Hurricane Katrina? Why did

⁷ Tina Susman, *Newsday*, September 11, 2005. See also Eric Lipton & Scott Shane, "Leader of Federal Effort Feels the Heat," *New York Times*, September 3, 2005.

⁸ "Private FEMA," *Wall Street Journal* (online edition), September 5, 2005. For more on the private response, see Mary L. G. Theroux, "Public and Private Responses to Katrina: What Can We Learn?" *The Independent Institute*, October 20, 2005, www.independent.org and Mindy Fetterman, "Corporate Muscle is Brought to Bear on National Disaster Planning," *USA Today*, October 12, 2006.

insurance companies like State Farm rent hotel rooms in nearby cities and send insurance agents down to the area even before the hurricane hit? For one, as noted above, unlike government, private organizations are constrained by only one rule: make profits. If a profit opportunity emerges in expectation of or following a natural disaster, private firms like Home Depot have an incentive to immediately respond to the disaster and the flexibility to do so.

Further, private actors have a much greater incentive to learn about the potential for a disaster in the first place. The first business to a disaster area with provisions for victims stands to benefit handsomely from beating others to the disaster zone. Even private non-profit organizations have a strong incentive to identify disasters quickly. The faster they are on location to help those in need, the more likely are potential charitable contributors to give additional money to their organization. As Nobel Laureate George Stigler elaborates:

“I received a note from Tjalling Koopmans asking whether I had really said that if Manhattan was bombed, the best way to evacuate the population would be to use the price system. I was taken aback by his letter, because I had not even thought of that problem. But I told Tjalling that the first time Manhattan was bombed any system would be grotesquely confused and inefficient. If the bombings became repetitive, however, I thought the price system could handle the problem well. The first half of my answer was surely correct, and I believe now even more than I did then in the market system's flexibility, adaptability, and resourcefulness in finding new ways to make money.” (1985: 61)

But what is government's incentive to identify disaster early and bring aid swiftly? In markets, the ability of consumers to “exit” and take their business (or charitable donations) elsewhere is king. When a private non-profit agency fails to

respond, its future donations suffer.⁹ When a private for-profit firm fails to respond, it loses profit. In government, on the other hand, this incentive simply does not exist. FEMA will continue to use coercive taxation to finance its activities regardless of its performance in any specific relief effort. There is no exit option for taxpayers. Within government, the “voice” option of negative media publicity and lost votes for incumbent politicians are the only incentives; there is no threat of going out of business.¹⁰

3 Information Node Two: What’s Needed and Who Needs it?

After identifying a disaster, the most important issues of information regard the identification of “what’s needed,” “who needs it,” and “who has the means to meet these needs?” Some disaster victims need water, others need shelter, and still others need food. Are the needs in different geographic areas different? It is likely that all disaster victims will require basic necessities, but the extent to which different individuals need these things will vary. Further, not all disaster victims will need these items as critically as others. In addition there will be many instances of specific areas needing specific help, such as rooftop rescues or massive bus evacuations, which are unique and unexpected. Finally, individuals have specialized resources only they know can solve the diverse problems that emerge following a disaster. No one person or agency could ever have access to all of this knowledge. An excellent example of how this problem is endemic to the nature of political institutions is the misallocation of military resources.

⁹ While we would expect non-profit firms to be less effective than for-profit firms because of a lack of prices, profit and loss, and issues of donor intent, since they can “go out of business” and are in competition with one another for donations, there is still a stronger feedback mechanism than in government agencies.

¹⁰ Wagner (1989) illustrates this difference with a great comparative discussion of the Edsel and Amtrak.

Following Katrina, for example, victims in some areas needed supplies or rescue efforts more urgently than other areas. Information as basic as this—what supplies are needed, and how urgently are they needed—is indispensable to providing effective disaster relief. Without it, demands go unsatisfied, both because required supplies are not called forth, and because existing supplies are misallocated, leaving those in need without life-saving essentials.

Consider first how private sector participants come to discover this information. In the marketplace, the interactions of suppliers and demanders generate market prices for various goods and services. As Hayek pointed out, these prices convey information about localized supply and demand conditions, indicating to suppliers where supplies are needed most and communicating to demanders when they may expand consumption (because supplies have become more abundant relative to demand) or curtail consumption (because supplies have become less abundant relative to demand). The beauty of the market is that it generates market prices, which convey information about relative scarcities and intensiveness of demand, coordinating the most willing suppliers with the most urgent demanders (Hayek 1945).

Even the charitable activities of private individuals and non-profit organizations, which suffer somewhat from the absence of market prices to guide them, are likely to be directed toward satisfying the most highly valued needs.¹¹ Individuals making donations have an incentive and desire to make sure their donations are used effectively, and an incentive to search out information as to the best use of their donated resources. Non-profit organizations who are not careful stewards of their donated resources soon find they have fewer donations to allocate. For-profit firms that choose to be charitable are

¹¹ For more on the relative effectiveness of non-profits, see footnote 9.

careful to allocate their resources in a way that generates value, because this generates the highest return to the firm in terms of reputation and thus future profits.

This is how private sector suppliers of disaster relief essentials, such as Wal-Mart, were able to quickly bring necessities like water to bear on the plight of Katrina victims who had been hit the hardest. Wal-Mart was already back in business, providing the items rescue workers and victims needed, in the right quantities, at their everyday low prices, and sometimes even for free.¹² Wal-Mart, which has donated more than \$20 million to Hurricane Katrina relief efforts, supplied the essential items hurricane victims and disaster relief providers needed.¹³ “Over \$3 million in supplies were given directly to shelters, providing a lifeline for stranded residents.”¹⁴ This included chain saws and boots, sheets and clothes, and water and ice.¹⁵ As one hurricane victim put it, Wal-Mart “was the only place we could find water in those first days. ... I still haven’t managed to get through to FEMA. It’s hard to say, but you get more justice at Wal-Mart.”¹⁶ Wal-Mart’s amazing capacity to bring the needed supplies to bear on the atrocity created by Hurricane Katrina has had even its staunchest critics praising the company.¹⁷

Consider, in contrast, how political decision makers might come to know how to allocate disaster relief supplies. Unlike the market, the political process does not generate market prices, nor does government have the incentive to be as careful a steward

¹² C. Cooper & R. Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security* (New York: Times Books, 2006), pp. 260-264. See also D. Brinkley, *The Great Deluge: Hurricane Katrina, New Orleans, and the Mississippi Gulf Coast*. (New York: William Morrow, 2006), pp. 251-253.

¹³ Michael Barbaro & Justin Gillis, “Wal-Mart At Forefront of Hurricane Relief,” *Washington Post*, September 6, 2005. See also “Corporate Katrina Gifts Could Top \$1B,” *CNNMoney.com*, September 13, 2005.

¹⁴ Sean Higgins, “Wal-Mart is Lauded for Fast Relief Aid to Katrina Victims,” *Investor’s Business Daily*, September 9, 2005.

¹⁵ John Tierney, “Let Wal-Mart Take Over Emergency Management,” *New York Times*, September 21, 2005 and John Tierney, “From Fema to Wema,” *New York Times*, September 20, 2005.

¹⁶ *Ibid.*

¹⁷ Sean Higgins, “Wal-Mart is Lauded for Fast Relief Aid to Katrina Victims,” *Investor’s Business Daily*, September 9, 2005.

of the resources it hands out to needy victims. For market prices to emerge, goods and services must be bought and sold. But the government is not in the business of selling anything. It only takes resources (taxes) and then gives them to others (through government purchases or direct transfers).

Consequently, political decision makers do not have market prices directing them where expenditures are needed most. This is why central planning failed and economies of the world overwhelmingly are now choosing not to centralize the production and distribution of “normal” goods and services (Boettke 1993). Governments simply have no way of knowing what to produce or how to distribute the resources under their control. Why then would we think that centrally planned disaster relief would work? Here too, government and its agencies do not have access to the information required to effectively distribute disaster relief.

Further, government employees have a much weaker incentive than private individuals to seek out information about where resources are most urgently needed and ensure value is created by the resources they allocate, even when compared to cases where the private sector gives resources away for free. Individuals are simply not as careful with other people’s resources as they are with their own. These simple insights from basic economic theory go a long way in explaining the chaos, confusion, and ultimate failure of FEMA-provided disaster relief distribution following Hurricane Katrina.

In the first week of relief activities alone, FEMA refused to ship trailers to Mississippi that could be used as temporary housing for disaster victims.¹⁸ In addition it

¹⁸ “Cut the red tape, Lott says,” *CNN.com*, September 5, 2005. See also “Lott: ‘I Am Demanding Help for Mississippi,’” *Jackson Free Press*, September 5, 2005.

turned away trucks with water demanded by many, prevented the U.S. Coast Guard from delivering fuel critical to facilitating recovery activities, and refused Amtrak's offer to evacuate victims who desperately needed to get out the disaster zone.¹⁹ The last Amtrak train left New Orleans empty.²⁰ Even the American Bus Association, representing Greyhound Bus Lines, offered to help FEMA evacuate the Superdome and Convention Center. But, like so many others who offered their assistance, the American Bus Association's offers fell on deaf ears, and they were never even able to even get a reply or response from FEMA officials.²¹

FEMA's misallocation of relief labor and supplies seemed to be never ending. FEMA moved a medical team of 30 people capable of treating hundreds of hurricane victims from Alabama to Mississippi and then to Texas. For 11 days, medical team members say their relief activities were reduced to treating one small cut. And then FEMA moved them again—everywhere but where they were needed and could accomplish the most, which was in New Orleans.²² As one frustrated medical team

¹⁹ Scott Shane, "After Failures, Government Officials Play Blame Game," *New York Times*, September 5, 2005. "Hurricane Katrina: Federal Agency 'Slow' to Accept Business Help," *Financial Times*, September 5, 2005. Democratic National Committee, "Bush's FEMA Turns Natural Disaster into Bureaucratic Disorder," Press Release, September 7, 2005. "When Wal-Mart sent three trailer trucks loaded with water, FEMA officials turned them away, [Aaron Broussard, president of Jefferson Parish] said. Agency workers prevented the Coast Guard from delivering 1,000 gallons of diesel fuel, and on Saturday they cut the parish's emergency communications line, leading the sheriff to restore it and post armed guards to protect it from FEMA, Mr. Broussard said" (Shane).

²⁰ Kathleen Parker, "Three Heroes Outwitted Bureaucracy," *New Hampshire Union Leader*, September 14, 2005.

²¹ Andrew Martin and Andrew Zajac, "Offers of Buses Fell between the Cracks," *Chicago Tribune* (online edition), September 23, 2005. On buses, see Brinkley (2006, p. 86) and Lisa Meyers, "What went wrong in Katrina's wake?" MSNBC (online), September 6, 2005. On other delays, see Elizabeth Williamson, "Offers of Aid Immediate, But U.S. Approval Delayed for Days," *Washington Post*, September 7, 2005.

²² Stone Phillips, "What Went Wrong in Hurricane Crisis," interview transcript, *Dateline NBC*, September 9, 2005

member lamented, “We joined the team to help people who need it, and we are not helping anybody.”²³

In another case of misallocated medical relief, FEMA Director Michael Brown received an email on September 2 describing the dire state of medical care in New Orleans and urgently inquiring about how important medical supplies that were offered could be employed to most effectively help hurricane victims. “Mike, Mickey and other medical equipment people have a 42-foot trailer full of beds, wheelchairs, oxygen concentrators, etc. They are wanting to take them where they can be used but need direction.”²⁴ But because of government’s inherent informational deficit described above, after waiting for *four days* Brown’s only response was to forward the message to another FEMA bureaucrat with a note that asked quizzically, “Can we use these people?”²⁵

In other critical areas resources were diverted to superfluous areas or sat idle and unused as well. A mobile communications unit, which could have provided much needed equipment to relief workers and victims, for instance, sat in Germany, with a chartered private plane ready to leave, for nine days.²⁶ Despite repeated attempts to contact FEMA and get the required permissions to come to New Orleans, they, like so many others, got no response and eventually gave up on trying to bring their resources to bear on the relief effort. The information problem that plagued FEMA plagued other government officials involved with the disaster relief as well. State police in Louisiana, for example, unaware

²³ Lisa Myers and the NBC Investigative Unit, “Relief Chaos in Katrina’s Wake,” msnbc.com, September 8, 2005. See also Bruce Alpert, “Demos Slam FEMA Medical Response,” *New Orleans Times-Picayune*, December 10, 2005.

²⁴ “‘Can I Quit Now?’ FEMA Chief Wrote as Katrina Raged,” CNN.com, November 4, 2005.

²⁵ Ibid.

²⁶ Myers, 2005.

of the dire local need to restore communications systems, delayed technicians sent to repair damaged communications equipment for days.²⁷

A similar situation prevailed in the case of 1,000 firefighters who believed that their much-needed efforts would be put to actually helping hurricane victims. Instead, they were sent to a hotel in Atlanta, forced to take days of sexual harassment courses, and eventually deployed by FEMA with only the job of handing out fliers with FEMA's phone number on it. As one firefighter astutely observed, "It's a misallocation of resources. Completely."²⁸

4 Information Node Three: Is What We're Doing Working?

After establishing if a disaster has occurred, determining what is needed and who needs it, and taking action to remedy the situation, the final piece of critical information needed for effective disaster relief management is feedback on whether the plan of action being pursued is actually working. In other words, are disaster victims getting what they need? Or are disaster relief efforts failing to provide for disaster victims? To appreciate government's inability to generate this feedback information, it is again useful to contrast this with the private sector.

In markets, the profit and loss mechanism informs suppliers whether or not they are satisfying the needs of demanders. Those who earn profits, which reward them with greater command over resources in the economy. Those who are not are punished with losses, and lose control over these resources. Profits and losses communicate to

²⁷ Kit Roane, "Can't Reach Out, Can't Touch," USNews.com, September 19, 2005.

²⁸ Lisa Rosetta, "Frustrated: Fire Crews to Hand out Fliers for FEMA," *Salt Lake City Tribune*, September 12, 2005; "Firefighters: We Were Misused in Katrina Rescue Efforts," NBC (online), September 8, 2005.

suppliers whether or not their activities are desirable to demanders, whether they should expand output, or alter their activities (Mises 1949). In the context of relief management, profits and losses tell private providers of disaster relief essentials like water, food, shelter, and even private protection against criminals, whether or not they are effectively fulfilling the needs of disaster victims.

Consider, for example, the numerous private security agencies that protected the property of residents and business owners. These private firms emerged to satisfy an unmet demand for property rights protection created by government's failure to perform this task in the wake of the disaster. In Louisiana alone, within 14 days of Katrina's landfall, the number private security firms climbed from 185 to 235.²⁹ The growing numbers of security firms offering their services to disaster victims reflected the growing profitability of providing this service, which in turn reflected consumers' satisfaction with these services and their demand for additional protection.

Private non-profit organizations confront a similar feedback mechanism because they rely on voluntary donations. The non-profits who create the most value for those they help garner more donations, while those who squander their resources suffer lower future donations. While this feedback is not as strong as the pure profit and loss mechanism, it remains stronger than for government, which finances its activities through coercive taxation. Lily Duke, for instance, an independent film producer with no previous relief experience, arrived in New Orleans with a single truckload of donated food. Because of her effectiveness in supplying aid to Katrina victims, donations to her

²⁹ Jeremy Scahill, "Blackwater Down," *The Nation*, October 10, 2005.

operation have increased exponentially. She now operates three distribution centers serving 20,000 people a day.³⁰

Because the resources under government's control are not primarily based on performance, government lacks an effective feedback mechanism. Consequently, political actors have very little idea about whether or not they should expand their activities, shift their activities, or drop them altogether. Political actors know only the costs of their activities. But they have no information in the form of feedback about the desirability of them. This makes economically allocating resources and coordinating the supply of these resources with those who desire them through the political process exceedingly difficult, if not outright impossible. Economic allocation requires that both the costs and benefits of activities be considered. But politics provides little information about the latter to political decision makers (Mises 1944).

When it comes to disaster relief management, this can be a serious problem. A striking example of this is the case of temporary housing provision. FEMA set up trailer parks that went virtually unused.³¹ It faced neither profits nor losses from its decision about where to locate temporary housing. Consequently, trailers were deployed where they weren't needed, at an astonishing cost to taxpayers.

FEMA spent \$1.3 billion on 95,000 trailers for hurricane victims, and in some cases \$38,000 per lot to make parks trailer ready—double the cost of the trailers themselves.³² Because FEMA chose to locate the trailers in remote places, away from cities and jobs, FEMA is also planning to spend millions to cook meals and provide bus

³⁰ John Seewer, "Resident Becomes Aid 'Boss' in New Orleans," Associated Press, November 13, 2005.

³¹ See Eric Lipton, "Trailer Dispute May Mean Thousands Will Go Unused," *New York Times*, February 14, 2006 and James Varney, "Trailer Cash," *New Orleans Times-Picayune*, January 21, 2006.

³² Ibid.

service and security for the trailer parks. In the not-too-distant future, FEMA will turn around and pay yet again to tear the parks down. FEMA's incredible misallocation carries little penalty or consequence for FEMA decision makers despite the considerable harm done to disaster victims.³³ In fact, FEMA's failure was rewarded with billions of additional dollars in funding for the agency's continued work.

How can FEMA learn if its relief activities are fulfilling the needs of disaster victims? How can it know how to change its course of attack, or whether it should change it at all? The inability to effectively evaluate the ongoing success or failure of disaster relief activities when disaster relief is centralized created significant problems for the relief efforts of FEMA and led government figures involved in managing the relief, at even the highest levels, to incorrectly and arbitrarily assess FEMA's success. In the absence of market feedback, government agents substitute political information, creating the political problem of public choice from the knowledge problem.

Department of Homeland Security Secretary Michael Chertoff, for example, evaluated the success of government's actions as follows: "We are extremely pleased with the response that every element of the federal government, all of our federal partners, have made to this terrible tragedy."³⁴ It is as if they were completely unaware of the abysmal failure of government's actions that was so obvious to non-governmental observers.

President Bush was equally unable to evaluate the failure of government's relief activities. Commending FEMA Director Michael Brown on FEMA's efforts, Bush now-

³³ Aaron C. Davis, "FEMA Trailer Parks Subject to Criticism from All Sides," *San Jose Mercury News*, October 31, 2005.

³⁴ Stone Phillips, "What Went Wrong in Hurricane Crisis," interview transcript, *Dateline NBC*, September 9, 2005

famously remarked, “Brownie, you’re doing a heck of a job.”³⁵ Unable to objectively determine the effectiveness of the government’s efforts, he later changed his tune, calling FEMA’s response to Katrina “unacceptable.”³⁶ Though political decision makers’ assessment of government’s actions eventually hit the mark, it came too late—only after changing government’s relief strategy was a non-issue, well after the situation in New Orleans and elsewhere was already improving.

5 Concluding Remarks

F.A. Hayek’s (1945) critical insight was that decentralized market activities generate information that coordinates the diverse ends and activities of all those participating in the market. When government substitutes central planning for markets, essential information is generated in an untimely fashion, generated inaccurately, or not generated at all. Because of this, central planning cannot effectively coordinate decision making among numerous and dispersed individuals with different endowments, wants and needs.

Hayek’s point holds true for all forms of central planning. The failure of command and control in this regard is as assured in the case of natural disaster management as it is for the creation of five-year plans. There is no reason to think that FEMA, or any other government agency charged with FEMA’s task, is immune to the information problem. Disaster relief, like all other forms of decision making requiring coordinated human behavior, necessitates information about a new constellation of market conditions to be acted upon, information that directs activities in such a way that those needs are economically satisfied, and finally information about whether or not the

³⁵ Ibid.

³⁶ Stephen Bainbridge, “The Invisible Helping Hand,” Tech Central Station, September 8, 2005.

activities undertaken towards this end are working effectively or not. Without this, coordination is impossible.

We have discussed how markets create this information and the incentives to act upon it, and how government—by its nature—cannot create either. This realization has radical implications for disaster management policy. Namely, government must be removed from disaster management to the same extent that it is removed from all other successful market activities. Concretely, this means that government’s near-monopoly control on disaster relief and role as a centralized “clearinghouse” of relief activities must be relinquished for disaster management to be effective. Tinkering with government disaster management at the margins is no more likely to make government disaster relief effective than tinkering with the Soviet Union’s centrally planned economy was likely to improve its effectiveness.

In government’s place, the market should be allowed to coordinate relief activities, as it did to a limited extent because of government restrictions following Hurricane Katrina. As we have illustrated throughout our discussion, despite government-erected hurdles, private for-profit and non-profit actors were remarkably successful in relieving the victims of Katrina, especially in those areas such as New Orleans that were hit hardest by the hurricane. The private sector proved itself capable, as it does under “normal” circumstances, of generating the relevant information at each of the critical nodes of disaster response. The public sector, in contrast, also like under “normal” circumstances, did not.

Our finding that an inability to overcome the information problem is the root cause of government’s failure to effectively manage natural disaster relief casts doubt on

recent explanations of FEMA's failure following Hurricane Katrina. One strand of argument, for example, suggests that an unfortunate succession of "bad directors," culminating in the leadership of former FEMA director Michael Brown, is the reason for this failure. Our analysis suggests that although incompetent directorship may exacerbate government's inability to effectively manage natural disasters, it is of subsidiary importance to Hayek's knowledge problem discussed here. Even the most benevolent and effective of directors cannot overcome this problem, which stems from inherent organization of government management, which is centralized. Thus, optimism for FEMA or other possible agencies of state-provided disaster relief is unwarranted. The "bad directors" argument is analogous to the "bad rulers" argument used by some to explain the failure of the Soviet Union. Here, as in the case of disaster relief, bad leadership does not help, but neither does it explain the core failure of the system. Replacing Stalin with Mother Theresa or Albert Einstein would have been no more help for the Soviet economy than replacing Michael Brown or the current FEMA director with one of these individuals would be.

Likewise, our discussion casts doubt on the argument that FEMA's recent reorganization under the Department of Homeland Security following 9/11 is responsible for its failure in the Gulf Coast. Again, while it is true that following this reorganization additional resources were channeled to fighting terrorism rather than, for instance, rebuilding levees, the fundamental issue is why government directed resources to the specific uses it did (a problem of information) instead of in alternative ways given the substantial overlap between ends involved in fighting domestic terrorism and preparing for natural disaster. A weak levee, which if destroyed could wipe out an entire region,

for example, is both a natural disaster concern and one closely tied to terrorism given such a target's clear vulnerability to terrorist attack.

Finally, our focus on the information problem calls into question arguments that FEMA *per se* is somehow to blame to for government's failed response to Hurricane Katrina. The May 2006 report of the Senate Committee on Homeland Security and Governmental Affairs, for example, suggests abolishing FEMA, replacing it with an even larger government agency for natural disaster relief management called the National Preparedness and Response Authority. Such proposals misunderstand the root failure of government disaster management, which is informational in nature and inherent to government itself. Any government agency of disaster management is subject to the same information failures as FEMA and thus cannot be relied upon to prevent failures like those that characterized government's response to Hurricane Katrina.

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