Building Codes: The Failure of Public Policy to Institutionalize Good Practice

Note: Florida has always been recognized as having the most stringent building codes in the country.

by Jean W. "Jinx" Parker

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One very destructive effect of Hurricane Andrew on our current system is the breach of faith in the ability of public institutions to represent the interests of all citizens in carrying out policy. Codes and local building regulations tend to be much more effective in the higher economic strata, while enforcement may be lax or-at the very least—uneven, further down the economic ladder. Yet, prior to Hurricane Andrew, most Florida residents still assumed that the construction industry was held to some basic standards that ensured a degree of value and safety for their investment. The breaking of what is basically a social contract between people and their representative government may in the end be the most destructive aspect of this powerful storm. Until there is some direct political cost for failure to meet basic expectations, for lack of commitment to the execution of relevant public policy, it is possible that we will continue to rely on a system that is neither effective nor responsive for a large portion of our population.

Hurricane Andrew

Hurricane Andrew was **a** rude awakening for many of us, accustomed to thinking that we in the U.S. stand in the forefront of technological knowledge and skill. The August 1992 images from Florida bore a striking resemblance to post-disaster damage scenes from Third World countries where massive devastation might be expected in settlements and cities less planned, less protected, less well-constructed, and less resilient. How could this have happened when, after each U.S. hurricane, we immediately questioned the adequacy of existing codes, then put into place new or revised standards, reflecting that knowledge gained in recent experience?

The stricken area, south of the Miami city center, was doubly vulnerable: not only did this area have a large amount of lowincome housing, it also had been relatively free of damaging tropical storms in the recent past. Where hurricanes are frequent events, the most vulnerable buildings (deteriorated or poorly built structures) are destroyed on a regular basis and replaced with something new and presumably better. Over time, the overall status of the local building stock can be improved and its vulnerability reduced. Hurricane Andrew took aim squarely at a highly vulnerable site with no natural protection and a huge number of poorly maintained or poorly constructed houses, apartments, and mobile homes. In addition, more expensive homes in modem, upscale neighborhoods—which would have been expected to sustain only minor damage under existing code requirementsturned out to be just as vulnerable to the ripping, tearing winds and pervasive rains. In spite of its near miss of the city center, Hurricane Andrew became the most costly of all our natural disasters in terms of its economic impact.

At the time of Andrew's devastating descent on the residents of Florida and Louisiana, hurricane protection was not a high national priority for funding. For example, federal support for wind engineering was estimated by the Wind Engineering Research Council to be less than one-fifteenth that for earthquakes and less than one-thirteenth that for floods. The dearth of support for technical research, however, was not a major factor in this situation. Building codes and regulations were in effect at the time of the storm that would have reduced the amount of damage suffered had they been followed.

The existence of standards, laws, and enforcement bodies led residents to believe in a degree of safety that had not in fact been achieved. Analogous to the failure to anchor or tie house components together well was our failure to tie policy implementation components together, to carry out the intention of the regulatory system. This doomed residents, businesses, insurers, and assisting agencies to unanticipated losses.

Caveat Emptor?

Any discussion of housing issues in a market economy involves a number of players: developers, builders, contractors, public agencies and regulatory bodies, manufacturers, lenders, insurers, day laborers, potential occupants. *et al.* Where the interests of all these players come together is at the point of occupant "acceptability": what is desirable is what sells. Competition to sell their product drives the search for improvements and enhancements. Buyers (the market) screen the product according to subjective criteria—design, workmanship, location, cost, landscaping—whatever factors in whatever priority order they are placed by a particular buyer during the decision-making process. Those who produce the most desirable houses are rewarded with sales, profits. and the ability to leverage both their profits and their reputations into further gains in market share.

Ideally, consumers will determine what is worth their investment and make choices for themselves that reflect their priorities in terms of status, design, location, affordability, and protection. Under normal circumstances, the market works to sift out those builders who produce shoddy construction. In this scenario, there is some balance achieved between the power to offer and the power of the buyer to determine what will sell. Where this scenario falls apart. however, is in low-income neighborhoods and communities where options are very limited—where there is a shortage of housing, where there is a shortage of affordable housing. or where the available housing is all of poor quality. At this point, the choices are gone. People are no longer able to make a decision for or against protection. quality construction, a safe site. Power shifts to the seller, and market factors are no longer freely at work, skewing the kind of decisionmaking that takes place. This is where the compact between public regulation or regulatory bodies, private businesses, and the consumer or homebuyer breaks down. The marketplace no longer penalizes poor workmanship because demand has outstripped supply. Residents must then rely on the regulatory system to ensure that basic standards are met.

Where there are building codes and standards in effect, the general public assumes that contractors and builders are required to follow these rules. Unfortunately. the occupant of a house often doesn't find out about the actual workmanship until after he or she has lived there for a time. In terms of a building's specific ability to perform well in a disaster situation, the occupant may not discover until a disaster hits and major losses are suffered that the builder did not follow the standards and regulations set forth in state and local codes.

The "let the buyer beware" attitude exhibited by some homebuilders clearly goes against public intent codifying and systematizing building regulations. The public has a right to expect compliance with at least minimal regulations, and to assume that inspection and enforcement paid for with tax dollars will ensure a basic standard of construction. Hurricane Andrew demonstrated the deficiencies in the regulatory system: failure of the building inspectorate to monitor and enforce regulations in South Florida was a primary reason for much of the damage suffered.

Reconsidering the Effectiveness of Regulation as a Strategy

In the U.S. we have established a regulatory/punitive model of setting standards for construction and establishing a system to achieve them. Still. Hurricane Andrew exposed a very real imbalance. On the one hand, we have respected technical expertise and training, organizational structure, federal and state standards, inspection and permitting requirements, access to building supplies, insurance and lending institutions, and redress through litigation. On the other, we have the actual product of this system, in supposed balance with its inputs. By providing unmistakable evidence of the poor quality of local housing and its failure to perform as expected. Hurricane Andrew intervened to expose this balance as an artificial construct—as flimsy as some of the buildings blown to pieces in the storm.

A thorough knowledge of international issues and findings in similar cases would have been helpful in casting light in the effectiveness of our strategies to achieve good building practice and in assisting us to anticipate real hazard impact. We might then have realized that many of our communities demonstrate marked similarities to the urban and suburban sprawl in less developed countries. We might have understood that we, too, suffer from major gaps between knowledge and practice. between regulation and implementation, between resident perception and physical reality, and between income levels in terms of the choices available and ability to influence the quality and amount of those choices. Instead, major issues usually addressed within the context of Third World "development"— lack of quality control, poor training, poor workmanship and upkeep, absentee ownership—were not tested to see if and how they might apply to lower-income areas of our own country where workmanship is often secondary to considerations of profit and speed of production.

Some of the major issues that would have illuminated our own situation relate to the over-reliance on building codes. Codes continue to have a less-than-desired impact on the performance of structures worldwide, in spite of numerous cases where structures built to code have performed well in disaster events. Major investments have been made over the past several decades to establish or revise national codes of practice, and significant post-disaster emphasis has been placed on revising and updating existing standards. Still, the majority of homes continue to be built without regard to codes.

This is not to say that codes are useless—they have proven to be extremely effective in improving engineered building stock over time in a number of areas. But reliance on regulation as a strategy to improve construction practice and ensure basic standards are met has not been overwhelmingly successful.

A brief review of international studies highlights a few of the reasons for this failure to link policy objective to actual result through the regulatory process. For example:

1. Codes rely on the "formal" housing system to track compliance.

Codes attain the highest percentage of success where training. monitoring, and inspection, plus pressure from insurers and lenders, work together to enable and enforce compliance. But a vast amount of homes are built outside the formal construction process, without the involvement of lending or insurance agencies, trained engineers or architects, experienced contractors and materials suppliers. etc.

2. Where codes are enacted, they often do not reflect local realities,

Some countries have established codes based on models from other nations that are too complicated or not applicable to the specific situations found in that country. British, French, and U.S. models, for example. have been transferred to a large number of countries. many of which are only now beginning the task of revising standards to reflect the local building context. In other countries, there is still no form of building regulation, or the existing codes may not cover hazard resistance. In a great number of cases, codes exclude major categories of local housing. Standards for earthen construction, for example, have only recently been added to several national codes, although this is a very common construction material in a large part of the world.

Where there is a code in effect, failure to include appropriate standards for low-cost housing types actually may increase the vulnerability of residents rather than achieving the desired opposite effect. Codes exclude these materials in order to phase out their use because they are believed to be weak, short-lived, unsafe/unhealthy, or otherwise undesirable as construction materials. People who can only afford to build with these less expensive materials thus are kept outside the formal housing process. Mortgage funds are not available, and neither plan approval nor the permitting process provides inspection for quality control. No formal training in improved building techniques for use of the materials is available for construction craftsmen. Lack of status and relative restriction to use in poor neighborhoods complete the downward spiral that results in huge numbers of houses erected with deteriorating workmanship and possibly substandard materials.

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3. Enforcement is a major problem in almost every case, whether urban, suburban, or rural.

Where codes do exist, they often are not enforced or are inadequately enforced because the inspection staff is too small to meet the need, not well-trained, or, in some cases, bribed to ignore certain aspects of construction. In many urban areas, zoning considerations are checked but full adherence to an approved plan is lacking. Where the components of a regulatory system are in place, lending agencies and insurers rely on plans. Everyone building or adding to/modifying a house must file a plan for approval, then inspectors check during key points of the construction process. However, it is one thing to approve a plan and quite another to verify that the completed structure was built according to that plan.

4. Maintenance and workmanship are not necessarily impacted by codes.

A preponderance of the damage assessment literature produced by engineers, urban planners, and construction professionals states that workmanship is at least as important (if not more so) as any other factor in structural damage. If enforced, a construction code may ensure that key techniques are followed. but can ensure neither the overall level of original workmanship, nor the timeliness and appropriateness of maintenance carried out over the life of the building. Once construction has been completed, control over the technology is lost unless other socio-economic components are targeted in the effort to obtain and preserve sound housing.

5. Political and special interest pressures usually play an active role in counteracting the objectives of codes.

Tourism, for example, is a real disincentive where competition for the tourist dollar is fierce. Zoning/land use restrictions and code specifications are often bypassed, allowing developers to build on poor sites or to erect structures contrary to the intention of local regulations. Waivers, exemptions, and dispensations are common where the short-term benefit or profit is at stake. Thus the burden of meeting a local or national code tends to be borne inequitably by the middle class in many places: enforcement does not reach low-income housing, and those who can exert economic and political pressure may exempt themselves from part or all of the process.

Access to affordable public housing has frequently been used for political purposes, to influence or reward voting behavior in some countries. Where construction projects are awarded through the political patronage system, the potential checks and balances in a normal competitive situation do not operate. Three government-financed housing projects in Jamaica, for example. lost 80 to 100 percent of their roofs in Hurricane Gilbert (1988), largely due to faulty construction rather than faulty design. Neither knowledge of the risk, nor knowledge of how to reduce exposure to that risk, nor a building code inspection capability provided sufficient incentive to ensure that builders and lenders met their responsibility to residents.

6. Reliance on regulation has contributed to the decline of responsibility.

Regulations tell you what must be done, but there is a pervasive belief in many parts of the world that if you are clever, you can avoid following them. If you are not caught, you feel empowered to continue this behavior, particularly where enforcement tends to be lax. If you are caught, you may resort to bribes or turn to litigation to resolve the problem, or you may find the punishment light enough to have made your actions worthwhile.

Few low-income communities have developed the kind of advocacy groups that might force compliance or that might actively seek the attachment of ethical value tags to the regulatory system. Where regulations do not exist, or where people build their own shelters in the nonformal sector, blame is of course more difficult to apportion but options for remedying the situation may expand the range of opportunities we explore in the U.S. In any case, definition of and communication of both roles and responsibilities are a very important part of closing the gaps.

Shifting Tactics to Achieve Our Goal

If we look at the impact of Hurricane Andrew in light of these generalized findings from international experience, we can see many parallels in the social and economic fabric of the region south of Miami. We may begin to understand the limitations of the regulatory approach as a means of institutionalizing a policy that says we believe in the value of a wellconstructed house and will take steps to ensure basic construction quality. Institutionalization in its broad and best sense relates to a belief or practice that is valued in a culture. In becoming customary, systematized or widely practiced, it becomes influential over the long term. We have not achieved the goal of institutionalizing good construction practice until we understand what it means, know how to do it within the framework of our resources, believe in its worth, and choose to do it. If the only incentive to act is a negative, punitive one, then we really have only achieved an artificial construct. In that case, neither increasing the amount of information available nor increasing the stringency of building regulations will make much of an impact on vulnerability.

Over-reliance on regulation has also severely curtailed the search for other ways to achieve safer human settlements. Most particularly, the emphasis on official codes has obscured to a great degree the fact that maintenance and workmanship both play major roles in the performance of a structure, and neither is necessarily impacted by codes. Believing that a system had been devised to ensure quality control, neither public nor private interests have committed many resources to the development of supplementary and complementary activities that might be likely to influence behavior or to provide positive incentives.

If the system of regulations/enforcement/inspection that we currently use is not working well, then it behooves us to look at what other options we might have to impact the quality of housing. We must not be so totally constrained by what we have done in the past that we focus only on ways of strengthening the rules and the specifications without looking at other options to alter the outcome by use of different kinds of inputs or by changing or expanding the list of participants.

One route is to focus on the construction industry as a whole with better or more targeted education. This means instruction, practice, and testing at all levels, from vocational and on-thejob training through professional degrees and licensing. what other options we might have to impact the quality of housing. We must not he so totally constrained by what we have done in the past that we focus only on ways of strengthening the rules and the specifications without looking at other options to alter the outcome by use of different kinds of inputs or by changing or expanding the list of participants.

One route is to focus on the construction industry as a whole with better or more targeted education. This means instruction, practice, and testing at all levels, from vocational and on-the-job training through professional degrees and licensing. Renewed emphasis also must be placed on development and revision of quality control standards that are appropriate, effective, and achievable. Retail building supply companies, which play an increasingly important role in construction education via short courses, workshops. and seminars for the do-it-yourself general public, should be a major target for dissemination of focused technical information, as well as public awareness messages.

Certain kinds of public awareness activities similar to public advocacy might also be useful in building a constituency for better, stronger housing by defining the bare minimum that people ought to be able to expect for X amount of investment. These efforts ought also to make a strong case for changing values so that the customer wants to pay more for real value— the strength of the structure, the ability to last a given number of years in reasonably good shape, the ability to perform according to some stated standard in the event of a natural hazard. Financing and insuring entities could be much more active in educating prospective homeowners and institutionalizing incentives.

Moreover, energy must be devoted to convincing people of their own responsibility in shaping the survivability and strength of their homes—both in terms of maintenance and upkeep, and in terms of making the extra investment or tradeoff required for good workmanship and increased safety.

Where a real competitive market exists, a motivated. informed buying public can effectuate a shift in priority from profit to quality values, if it so chooses. Where the situation is not competitive, or where regulatory capture is common, however, both governmental and private pressures must be exerted at all levels to assure residents and homebuyers that housing will meet minimal standards of quality and safety. Regulation is only one tool—and often not a very effective one, at that—in the bag of tricks we should rely on to achieve good construction practice to benefit ourselves, individually, and as a society.

About the author

Jean W. ("Jinx") Parker is the monitoring and evaluation specialist for the Caribbean Disaster Mitigation Project. She is working with the Organization of American States and all its project partners to develop appropriate performance standards and monitoring systems that will enhance the ability to measure the progress and effectiveness of various mttigation activities undertaken in the region. A graduate of Wellesley College, Parker has been involved for 23 years in international disaster management and reconstruction implementation. Her particular interest now is in mitigation and recovery issues.

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